

Upgrading to 12.2.5

A Case Study

Prepared by: Michael Brown, BlueStar

@MichaelBrownOrg

(IOUG) OAUG Quest #C17LV

Session ID: 10162

Who Am I?

Over 22 years experience with Oracle Database

Over 18 years experience with E-Business Suite

Chair, OAUG Database SIG

Co-Founder AppsPerf

Oracle ACE ACE



OAUG Member of the Year 2013

Applications DBA, BlueStar

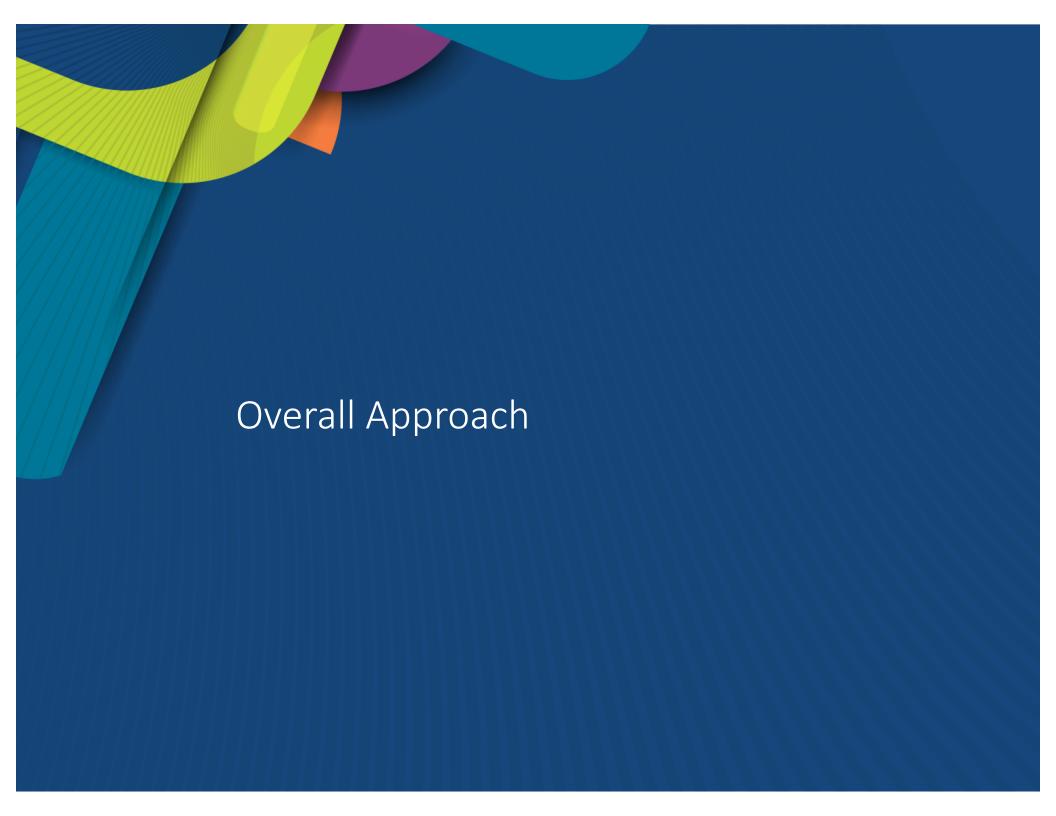




Agenda

- Overall Approach
- Technical Upgrade
- Moving from Discoverer to a custom solution in Applications Express
- Moving custom applications from the EBS iAS





Overall Approach

- BlueStar is an international distributor
 - Part numbers dictated by the manufacturer
 - Manufacturer Rebates
 - Retailer/Manufacturer price levels
 - Regularly need to match purchasing/receiving with orders/shipping
 - Extensive use of spreadsheets
 - NLS: French Canadian and Latin American Spanish
- BlueStar using an off-shore group for most development and functional support
 - Most IT employees in Hebron, KY
 - DBAs are remote
- 11.5.10.2 decisions
 - Heavily customized did not follow best practices
 - All reports in Discoverer
- R12.2 was to maintain functionality
- GOAL: development was to conform to best practices
- GOAL: Eliminate Discoverer



Overall Approach

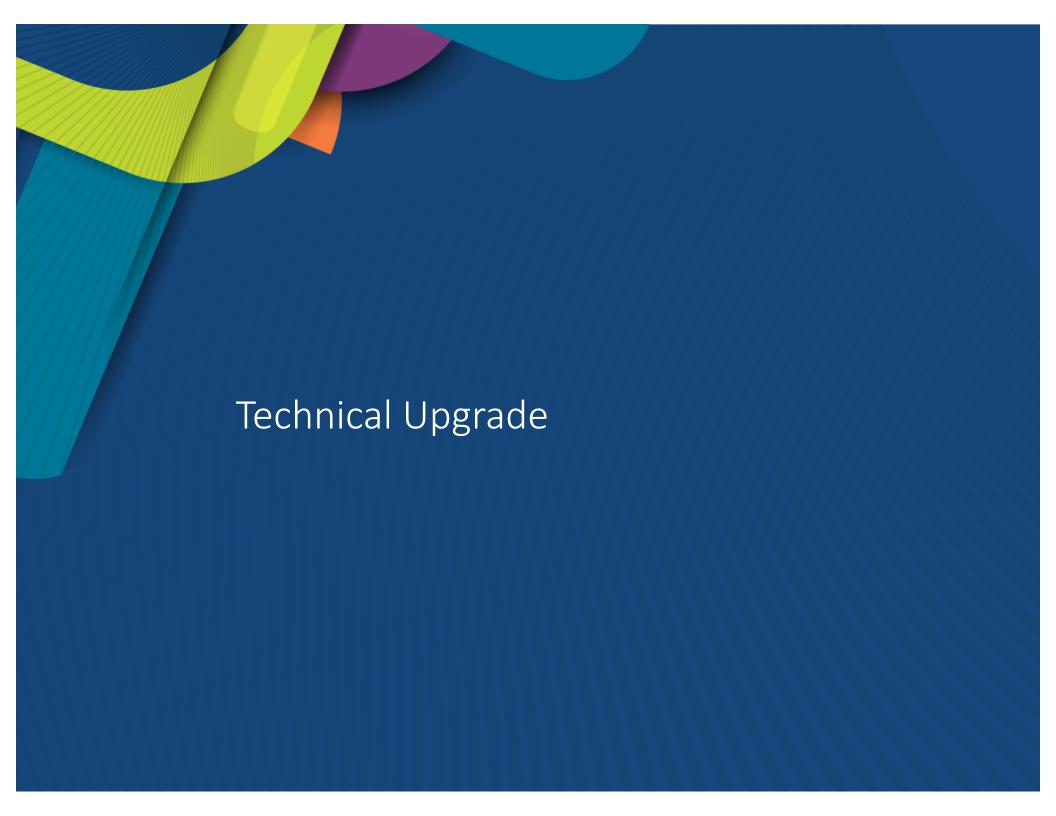
- Needed a tool to track code migrations, configurations, custom objects, and testing
 - ConfigSnapshot
 - Panaya
 - Our choice
 - Decided fixing customizations and test tracking were our major issues
 - Has been a great choice for use in our project
- Needed a way to track issues and upgrade plan between employees in Kentucky, North Carolina, Florida, and Canada as well as our off-shore resources in India.
 - Using Google Sheets
- 11.5.10.2 environment is 32-bit Oracle Linux 5 applications tier (4 nodes), 64-bit Oracle Linux 5 Database tier
- 12.2.5 is 64-bit Oracle Linux 7 applications tier, 64-bit Oracle Linux 6
 Database tier



Overall Approach

- Go-live was scheduled to start after shipping Dec 30,2016 and to be completed before start of business on Jan 3, 2017 (roughly 80 hours).
 - The business postponed the go-live at the last minute because of some new contracts starting in January 2017.
 - Go-live rescheduled for July.
 - Decision was made to carry forward with some of our changes now
 - Replaced Discoverer
 - Replacing how we load spreadheets
 - Released 11i Code Freeze





General Upgrade Concepts

- Read the documentation
 - 12.2 is a new starting point for the technical team
- Have an upgrade notebook
 - Many Oracle documents are live, keep copies
 - MOS Notes
 - Documentation
 - All decisions
 - Who and Why
 - Every Issue in every pass through the upgrade
 - Timing information on each step



High Level Upgrade Steps

- Current environment EBS 11.5.10.2, DB 11.2.0.4
- Before the upgrade
 - Go through the functional pre-upgrade steps
 - Preparing for the Upgrade chapter in Oracle E-Business Suite Upgrade Guide: Release 11i to 12.2
 - Ensure all code changes in 11i are also made in R12.2
- Prestage the 12.2 apps tier, including apps tier ETCC identified patches
- Downtime
 - Final pass through pre-upgrade steps
 - Database patches
 - Preupgrade patches in 12.2
 - Upgrade to 12.2.0
 - Convert to online patching
 - Apply 12.2.5
 - Sign the JAR files
 - Apply post upgrade patches and migrate custom code
 - Complete post upgrade functional steps



- Once the downtime starts
 - BlueStar has over 150 steps in the upgrade script
 - Database
 - Apply outstanding database patches
 - Business decision: time in downtime v. cost of full 11i regression test if patches are installed preupgrade
 - Switch to 12.2 init.ora parameters
 - Size for the upgrade (job_queue_processses and parallel _max_servers maxed for hardware)
 - Changes to UTL_FILE_DIR
 - APPLPTMP on apps tier must point to a location on the app tier that can be accessed using the same path from the database tier via UTL_FILE.
 - 11i apps were NFS mounted from database server
 - We chose to change the in R12.2
 - Disable custom triggers
 - Add required datafile space



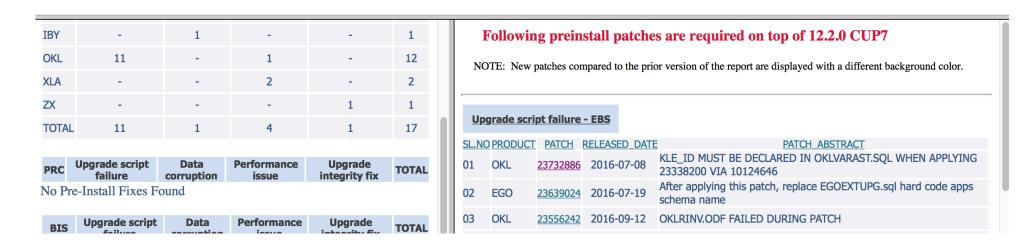
- Apps Tier
 - Initially like any other patch
 - Enable Maintenance Mode
 - AD must switch to R12
 - Run adgrants.sql on the database server
 - Merge the ad patches (make sure you remember –admode)
 - Apply pre-install patches
 - MOS Note 1448102.1
 - Includes a wget.sh script to download the patches



Pre-install patches for R12.2 upgrade

Reference: Please see MOS note: 1448102.1 Product Family: E Business Suite (EBS)

E-Business Suite Release 12.2 Consolidated Update Pack 7 (CUP7) is now available as patch 22742071:12.2.0. Apply 12.2.0 CUP7 during the upgrade.



This report has been generated on: Tue Feb 21 02:16:21 2017



- Merge the preinstall patches with the 12.2.0 driver
 - cd \$AU_TOP/patch/115/drive
 - admrgpch -d . -preinstall -master u10124646.drv
- Apply fixes for known issues
- VNC
 - adpatch options=nocopyportion,nogenerateportion
 - u_merged.drv
 - List of known issues and fixes in notebook
 - For example
 - About 3.5 hours into the upgrade, pycofuna.ldt fails
 - MOS Note 1615918.1 says to skip if not using payroll
- Disable Maintenance Mode
- Migrate autoconfig to the database tier



- In VNC, run rapidwiz to configure the apps tier
 - About 1 time in 3, no domains are configured
 - \$FMW_HOME/webtier/instances or is empty
 - MOS Note 1953456.1
 - cd \$FND_TOP/patch/115/bin
 - perl txkEBSDomainConfig.pl
- Enable Custom Triggers
- Enable Online Patching
- Apply AD/TXK Delta 8
 - Run checkMTpatch.sh from ETCC to store the results in the database
 - Migrate autoconfig to database tier



- Apply 12.2.5 (19676458) in downtime mode
 - adop phase=apply apply_mode=downtime patches=19676458
- Sign the JAR files
- Start the apps tier
- Complete patching cycle by running cleanup
 - adop phase=cleanup
- Update the current snapshot using adadmin
- Switch to Framework Simplified home page
- Setup Corporate Branding to use BlueStar logo
- Deregister and adsplice custom schema

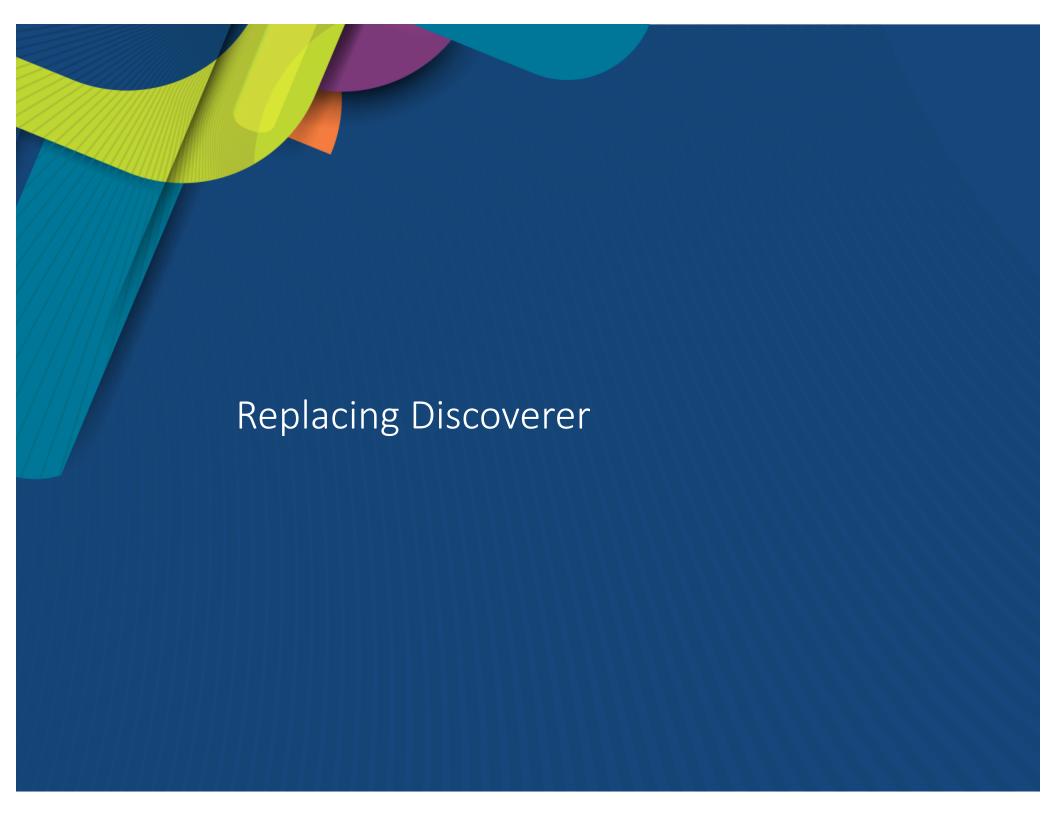


- Apply the rest of the 12.2/12.2.5 post upgrade patches
- Update the snapshot
- Get and apply the NLS synchronization patches
 - All further patches require all languages
- Complete the patch cycle
- Migrate the customizations
 - For BlueStar this includes
 - Changes to 11i customizations
 - Fixes to R12 issues
 - Move applications installed in 11i iAS to Glassfish
- Apply some additional patches that were not included before the NLS generation
- Turn over to the functional team to complete post upgrade setups



- Complete Historical Data Upgrade
- Set up for cloning
 - adpreclone.pl
- Take full backup
- Clone from backup to create support, DEV and TEST instances
 - Keep one R12 instance from previous upgrade cycle for a couple of weeks





Oracle Applications Express

- Using Oracle Applications Express 5.1, ORDS, and Glassfish Community Server
- Discoverer used Oracle Applications login
- 12.2 has hooks to allow a similar capability in Oracle Applications Express (Apex)
- Decided to use EBS user authentication, but not responsibilities since hooks do not exist between Apex and 11i
- Use an application alias and a URL forward to access
 - http://ebsrpt.bluestarinc.com => http://pdbdb1.bluestarinc.com:8080/ebs/f?p=EBS_REPORTS_11i
 - After upgrade is live, will change to EBS_REPORTS_R12



Authentication

- Create a custom function under apps to validate logins
 - This will just call fnd_user_pkg.validatelogin
 - The fnd_user_pkg contains operations that you do not want to release to another schema, by writing a wrapper function we can just grant execute on the specific features that are required.
- At BlueStar we set the organization at the responsibility level
 - In Discoverer, this was used to set the org for a report
 - In the Reporting app, we decided to all the user to select from a list of allowed orgs (or in some cases to select all allowed orgs).
 - We did this by taking the userid and finding the list of allowed orgs

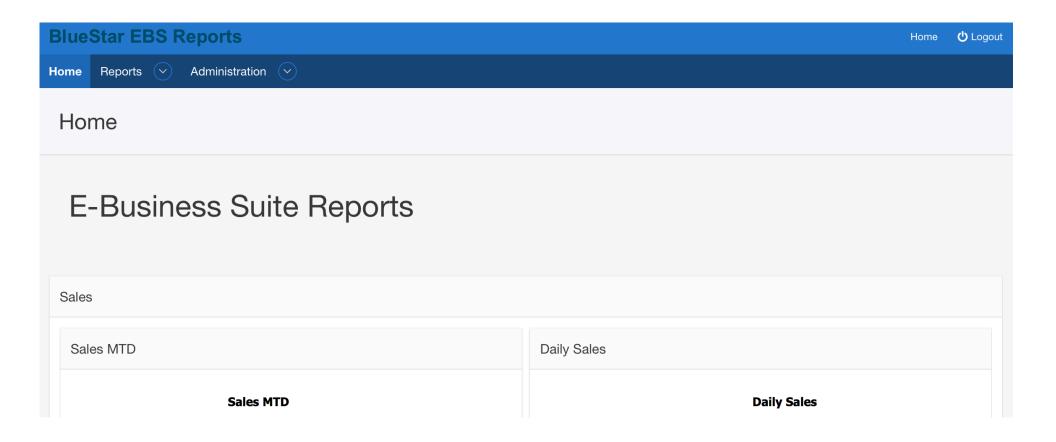


Authorization

- In Apex, you can restrict access to menu items, pages, and even objects on pages based up Authorization rules.
 - As we took the reports from Discoverer, we broke them down by the users that had access into job categories
 - Sales
 - Purchasing
 - Marketing
 - Etc
 - We further added levels to these since there are reports that are appropriate for managers but not a sales person.
 - Users that have access to define access in the EBS also have the ability to assign EBS responsibilities to the report authorization levels

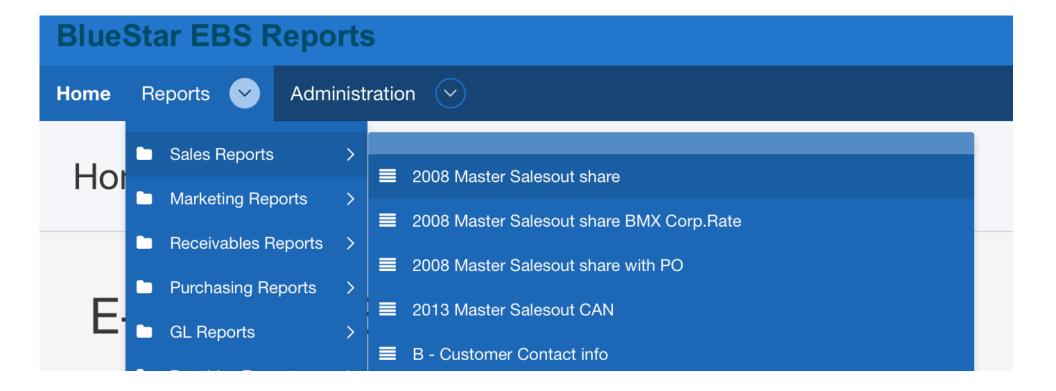


Home Page



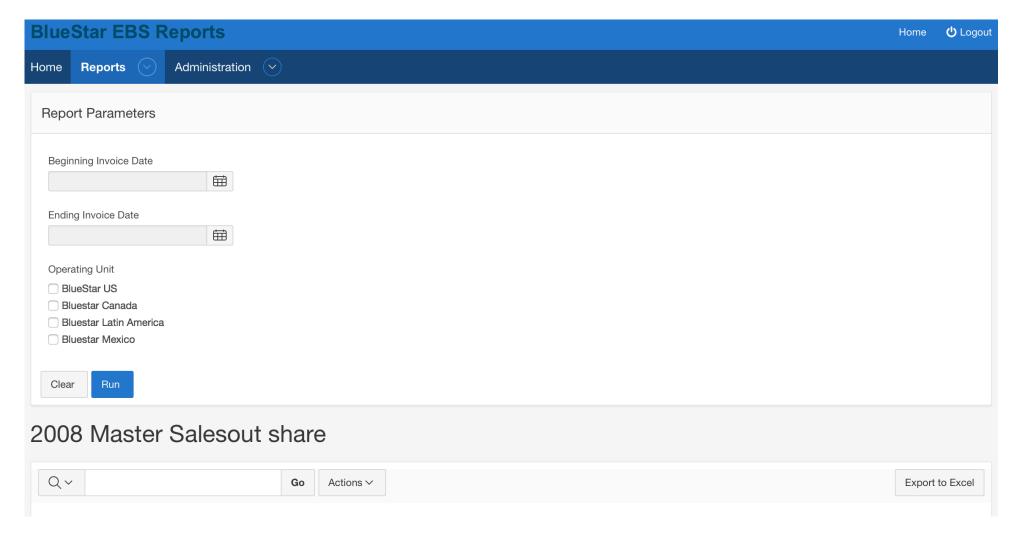


Menus



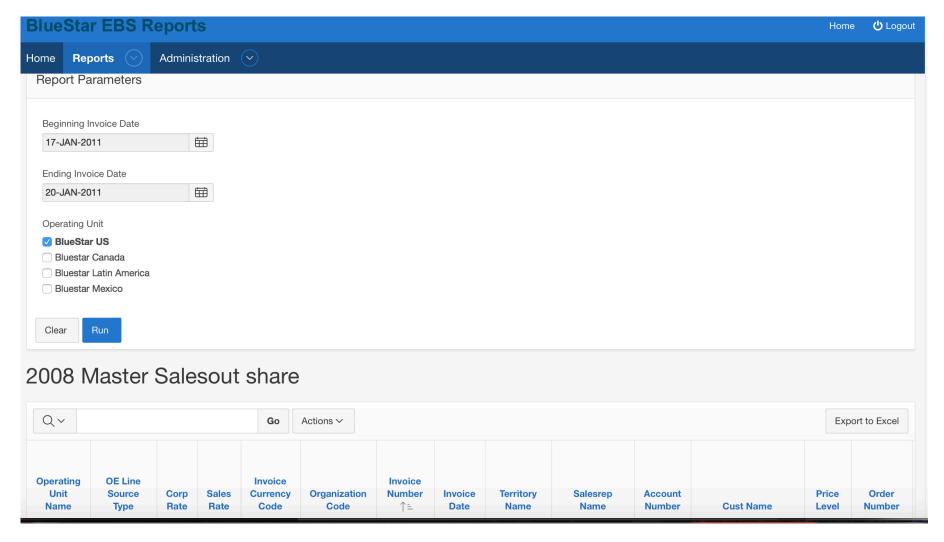


Example Report





Example Report





Export to Excel

- Built in download produces a csv
 - Does not work well for BlueStar
- Wanted to export to xlsx
 - Anton Scheffer wrote a utility (as_xlsx) to convert a query to xlsx
 - https://technology.amis.nl/2011/02/19/create-an-excel-file-with-plsql/
 - You can also pull the query behind an interactive report and the bind variables using the builtin apex_ir package.
 - Used the get_report_sql from http://deneskubicek.blogspot.com/2013/05/getting-interactive-report-query.html
 - Used a couple of application level items and a page to implement a routine that could be called from any interactive report to produce an xlsx file
 - The xlsx is built in the large pool, make sure it is large enough



Internals

- Some lessons learned
 - Identify the queries so you can deal with performance issues easier:
 - SELECT /* Page 156, 2008 Master Salesout share */
 - Discoverer produces some ugly code
 - Make sure filter locations make sense
 - Check for allowed orgs



Export to Excel

Create an After Submit process to fire when the Export button is pressed:

```
DECLARE
  v_sql VARCHAR2 (32767);
  v_name varchar2(200);
BEGIN
  v_sql := xbsi.xx_get_report_sql (:app_id, :app_page_id, FALSE);
  select PAGE_TITLE into v_name from APEX_APPLICATION_PAGES where PAGE_ID =
  v('APP_PAGE_ID') and APPLICATION_ID = v('APP_ID');
  APEX_UTIL.set_session_state(p_name => 'IR_SQL', p_value => v_sql);
  APEX_UTIL.set_session_state(p_name => 'IR_NAME', p_value => v_name);
  APEX_UTIL.REDIRECT_URL('f?p=' || v('APP_ID') || ':179:' || v('SESSION'));
  END;
```

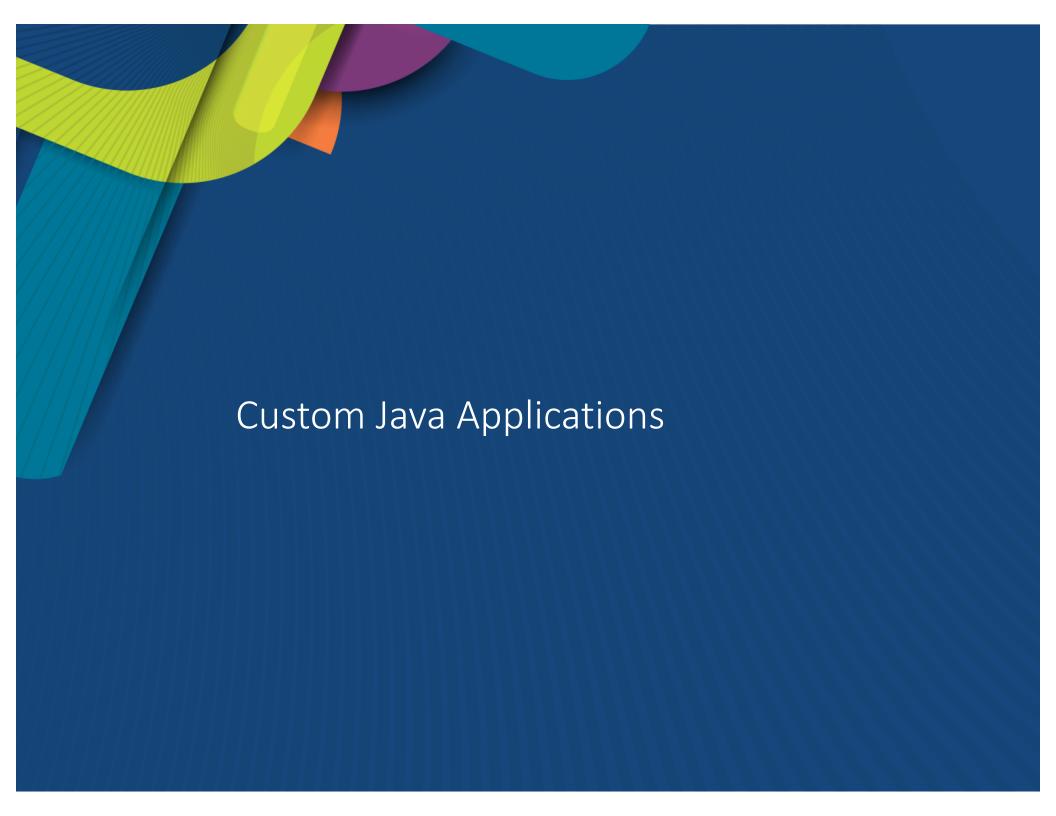


Export to Excel

```
    Export Page

    • Create a Pre-Rendering Before Header process
     DECLARE
         v mime VARCHAR2(100);
         v length NUMBER;
         v file name VARCHAR2(2000);
         file blob BLOB;
    BEGIN
             xxbsi.as_xlsx.query2sheet(v('IR_SQL'));
            select xxbsi.as xlsx.finish,v('IR NAME')||'.xlsx'
              into file blob, v file name
              from dual;
             v mime:='application/vnd.openxmlformats-officedocument.spreadsheetml.sheet';
             SELECT DBMS_LOB.GETLENGTH(file blob)
             INTO v length
             FROM dual;
             owa util.mime header( nvl(v mime, 'application/octet'), FALSE, 'UTF-8');
            htp.p('Content-length: ' | | v length);
            htp.p('Content-Disposition: attachment; filename="'||v file name||'"');
            owa util.http header close;
            wpg docload.download file(file blob);
             apex application.stop apex engine;
    end;
```





Custom Java

- We allow certain customers to update their information using SOAP
- We also found that our credit card processor did not support 12.2
- Already using glassfish on db tier
 - Installed glassfish on apps tiers
 - One benefit is that this can just be another applications tier migration
- Used proxy server to keep customer side URLs the same



Cloning

- Glassfish is not impacted by the clone
- Means development is not overwritten by production
 - Generally good since I restore development code as much as possible with a refresh
- However, in all other environments, I want production code after cloning

Our solution:

- We have a known location (that is refreshed during cloning) which contains all the war files installed in the glassfish server.
- For the most recent version of each war, there is another file file.MIGRATION that links back to the migration directory
- Post Cloning, we review the files in war files and reinstall them using the instructions in the appropriate migration directory.





Q&A

mbrown@bluestarinc.com

http://blog.michael-brown.org



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