Best Practices for Using Oracle E-Business Suite SDK for Java with Oracle ADF

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Program Agenda

- Review of previous EBS SDK webcast
- Building ADF applications with the EBS SDK: Best Practices
Review of Previous EBS SDK Webcast: Using Oracle ADF with Oracle E-Business Suite
Review of Previous EBS SDK Webcast

Right technology

- Choose the right technology for your EBS extension
  - OA Framework
  - Oracle ADF
  - Both (hybrid pages)
Choose OA Framework If You Need to…

New Applications

- Use Flexfields
- Have same look and feel as the E-Business Suite application
- Use OA Framework Personalization
Choose Oracle ADF If You Need to…

New Applications

- Support multiple data sources such as Web Services, URL, Java …
- Have multi-channel rich user interfaces
- Same development platform as Oracle Fusion Applications
- Support mobile devices
Or Choose OAF Pages with ADF Regions

“Hybrid Page” lets OAF fields coexist with ADF

- OAF Main Page
- Embedded ADF content
- Other OAF fields such as flexfields
- Rich Content Container in OAF
Oracle E-Business Suite SDK for Java
For Releases 11i to 12.x of Oracle E-Business Suite

E-Business Suite SDK for Java
- JAAS
- Session Management
- Profile
- i18n
- Language Info
- Messages
- Apps Log Handler

AppsDataSource
Review of Previous EBS SDK Webcast

- Use Oracle E-Business Suite SDK for Java with Oracle ADF
  - AppsDataSource
  - EBS security
  - With or without EBS context
    - JAAS provide provides only credentials and roles
    - Session management provides credentials, responsibilities, and more
Oracle E-Business Suite SDK for Java

Session terminology

- “Session” refers to Oracle E-Business Suite ICX session
  - “User session” or “EBS session”
  - Context information such as user name, responsibility, NLS locale, other information
  - Identified by ICX session cookie on browser
- “Shared session” means same EBS user session across technologies
Organization Chart in HCM

HCM embeds ADF in OA Framework using EBS SDK

- Available in Release 12.1 HRMS RUP5 - Patch 13418800 (R12.HR_PF.B.Delta.5)
Oracle Electronic Kanban (roadmap)

Entire application built using ADF but part of EBS

- Uses session management
- Launches from EBS home page
- Logging out logs out EBS too
- Calls EBS PL/SQL APIs
Building Applications with Oracle E-Business Suite SDK for Java: Best Practices
Development and Navigation
What JDeveloper Version to Use?

- Use JDeveloper 11g R1
  - Latest 11.1.1.6.0
  - Oracle Fusion Middleware Stack Tooling

- Use JDeveloper 11g R2
  - Latest 11.1.2.3.0
  - ADF, Java EE specific
Added OAF J Dev version
jruiz, 11/13/2012
Using the AppsDataSource
Avoid connecting to APPS schema directly

- External server does not need APPS password
- External application can call stored procedures available in APPS
- Dedicated FND user with UMX|APPS_SCHEMA_CONNECT role
Using AppsDataSource with JDeveloper

Avoid connecting to APPS schema directly from JDeveloper

- Set up AppsDataSource in Oracle WebLogic Server.
  - Follow MOS 974949.1.
- Create Application Server connection in JDeveloper
- Testing/Deploying
  - Set Application Server -> Run to new connection.
  - Generate EAR file and deploy via Enterprise Manager.
Navigation to ADF From Oracle E-Business Suite

- External ADF server profile option: FND_EXTTERNAL_ADF_URL
- Register ADF page as ADFX-type functions with WEB_HTML:
  GWY.jsp?targetPage=<URL for ADF page>
- Put functions in EBS menus
- Oracle E-Business Suite Release 12.1.3 required
Create Function: Details
* Indicates required field

Web

* HTML Call
GWY.jsp?targetPage=faces/ADFExamplePG

- [ ] Secured
- [ ] Encrypt Parameters

Host Name
UMX Roles
Using EBS UMX Roles with JAAS

- Most users have assigned responsibilities, but JAAS requires UMX roles
  - Want to avoid adding role directly for hundreds of users
- Create a UMX role, then add the role to a responsibility
  - Be sure to add the responsibility name as the security context for the role’s grant
- Use the UMX role for your ADF application
  - Treat as enterprise role in ADF security
Using Session Management Feature with ADF Applications
Session Management Flow

Session Management uses EBS login screen

1. Log in to EBS
2. Choose ADF Function from Responsibility
3. ADF Page
4. Initialize Session
5. ADF BC (Model)
Architecture of ADF with Session Management

You need logic in both UI and ADF Model layers

ADF UI Layer

Page

MainPageContainerListener
  beforePhase()
  checkEBSSession()
  getAppModule()*
  setLocale()

ADF BC Layer

Application Module

getEBSSession()

SDK
  EBiz object
  ICX Session

Any calls to PL/SQL
stored procedures
Configuring ADF UI

Log in to EBS

Choose ADF Function from Responsibility

Initialize Session

ADF Page

ADF BC (Model)
ADF UI Artifacts Required

**PagePhaseListener**
- Java file
- Custom control for ADF Lifecycle
- Execute business logic before page loads
- Establish session with E-Business Suite

**Page Definition**
- `<MyPage>`PageDef.xml file
- Registers custom phase listener
- Holds bindings for accessing business services

**Web.xml**
- Holds the Application Server Node ID
- ADF Faces Application settings
Create a Custom Phase Listener for ADF Page

ADF UI Layer

- Java file `<MyPage>ContainerListener`
- Listener establishes EBS session before the page displays
- Implements PagePhaseListener
  - Recommended: `beforePhase(PagePhaseEvent pagePhaseEvent)`
  - If needed: `afterPhase(PagePhaseEvent pagePhaseEvent)`
Register Custom Phase Listener

- Register your listener at the single-page level in the pageDef.xml file or globally in adf-settings.xml

- **MainPageContainPageDef.xml example:**

```xml
<pageDefinition xmlns=http://xmlns.oracle.com/adfm/uimodel
    version="11.1.1.56.60"
    id="MainPageContainPageDef"
    Package="oracle.apps.flm.ekanban.common.ui.page"
    ControllerClass="oracle.apps.flm.ekanban.common.ui.bean.
        MainPageContainerListener">
```
Custom Phase Listener

beforePhase() example code

```java
public void beforePhase(PagePhaseEvent pagePhaseEvent) {
    checkEBSSession(pagePhaseEvent);
    setEBSLocale(pagePhaseEvent);
}
```
Custom Phase Listener

`checkEBSSession()`

- Initialize and check if valid EBS session
  - get the application module
  - get session from application module
- Redirect to EBS login page if needed
- Keeps EBS session alive
Custom Page Listener

Tip: Validating ADF life cycle phase

- Optional: Verify you are at certain phases before calling listener methods
  - Separate ADF application: make sure user has not logged out by calling checkEBSSession() at every phase (not checking for particular phase)
  - OR
  - ADF pages embedded in OA Framework pages: Improve performance by checking only certain phases
    - checkEBSSession(): check ADFLifecycle.INIT_CONTEXT_ID phase
    - setEBSLocale(): check ADFLifecycle.PREPARE_RENDER_ID phase
Custom Phase Listener

getAppModule() called by checkEBSSession()

- getAppModule() in UI code follows ADF best practice of going through model layer to get application module instance

```java
public static ApplicationModule getAppModule() {
    BindingContext bctx = BindingContext.getCurrent();
    DCDataControl dc =
        bctx.findDataControl("[dcname]");
    ApplicationModule am =
        (ApplicationModule)dc.getDataProvider();
    return am;
}
```

- `[dcname]` is the name of the application module in the .cpx file

```java
DCDataControl dc = bctx.findDataControl("commonAMDataControl");
```
Custom Phase Listener

setEBSLocale() on the UI

- Get the EBS locale from the EBS session:
  
  ```java
  if(sessionEBS != null)
      locale = sessionEBS.getLocale();
  ```

- Set the ADF locale with the EBS locale value:
  
  ```java
  if(FacesContext.getCurrentInstance().getViewRoot() != null)
      FacesContext.getCurrentInstance().getViewRoot().setLocale(locale);
  ```
Configuring ADF Business Components

1. Log in to EBS
2. Choose ADF Function from Responsibility
3. Initialize Session
4. ADF Page
5. ADF BC (Model)
ADF Business Components Artifacts Required

- Code in AMImpl.java file
- Manages session against E-Business Suite
- Keeps one instance of EBiz object
- Implements data access methods
- Application business services entry point
ADF Business Components Layer: EBiz Object

EBiz object needed for session management, profiles, messages

- Getting EBiz instance in the application module
  - Object representation of the Oracle E-Business Suite environment
  - Holds information such as protocol, domain name, GUEST user name, database_id, Release 11i or R12, and so on
  - Requires APPL_SERVER_ID and connection
Accessing Node ID Information

EBiz object requires APPL_SERVER_ID from desktop DBC file

- Avoid hard coding the APPL_SERVER_ID needed by EBiz object
- Add a parameter to the application’s web.xml:

```xml
<context-param>
  <param-name>APPL_SERVER_ID</param-name>
  <param-value>B6EC2D561F631556E0437C2AD20A33A211171545941920540894393938377354</param-value>
</context-param>
```
Accessing Node ID Information

Access the parameter from your ADF Context

- When you need the APPL_SERVER_ID for the EBiz object:

```java
ServletContext servContext =
    (ServletContext)ADFContext.getCurrent().getEnvironment().getContext();

String applServerID =
    servContext.getInitParameter("APPL_SERVER_ID");
```
Accessing Node ID Information

Make the APPL_SERVER_ID deployment-specific

- Administrator adds site-specific APPL_SERVER_ID value from desktop DBC file to plan.xml file upon deployment of application on Oracle WebLogic Server
- plan.xml value overrides value in web.xml
Put EBS PL/SQL Calls in Application Module

Initialize the ADF Business Components context

- Typically need to initialize database session first
- Set up and call PL/SQL fnd_global.APPS_INITIATE
- Set up and call PL/SQL fnd_global.set_nls_context or use AppsSessionHelper.setNLSContext() from fndext.jar
- Set up and call the EBS PL/SQL APIs you need
Embedding ADF Pages in OA Framework Pages
Embedding ADF Content in an OAF Page

“Hybrid Page” lets OAF fields coexist with ADF

OAF Main Page

Rich Content Container in OAF

Embedded ADF content

Other OAF fields such as flexfields
Embedding ADF in OA Framework Pages

You need two JDeveloper environments: ADF and OA Framework
Embedding ADF in OA Framework Pages

You need two JDeveloper environments: ADF and OA Framework

- Build ADF page using JDeveloper 11g
  - Deploy ADF application to external Oracle WebLogic Server
- Build OA Framework page using development environment corresponding to your EBS version 12.1.2 or later
  - See “OA Framework - How to find the correct version of JDeveloper to use with eBusiness Suite 11i or Release 12.x” (Doc ID 416708.1)
  - Follow OA Framework development standards
  - Deploy custom OA Framework application in EBS environment
Embedding ADF in OA Framework Pages

Building the ADF page

- You may need to use a stretchable ADF component to contain your main component (such as a hierarchy viewer)
Embedding ADF in OA Framework Pages

Register the ADF page as EBS function

- Set Type to “External ADF Function”
Embedding ADF in OA Framework Pages

Register the ADF page as EBS function

- Set HTML Call to
  `GWY.jsp?targetPage=faces/<your ADF page>`
Embedding ADF in OA Framework Pages

Building the OA Framework page

- Create a rich container region in your OA Framework page
  - “Others” Content Type
  - Set Destination Function to your function code
Resources
Resources

- “Oracle E-Business Suite Software Development Kit for Java” (My Oracle Support Doc ID 974949.1)
- See “Oracle Application Framework Documentation Resources, Release 12” (Doc ID 391554.1)
- See “OA Framework - How to find the correct version of JDeveloper to use with eBusiness Suite 11i or Release 12.x” (Doc ID 416708.1)
- ADF blogs
E-Business Suite Technology Stack Blog

blogs.oracle.com/stevenChan

- Direct from EBS Development
- Latest EBS techstack news
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