JD Edwards EnterpriseOne Tools

Developing and Customizing Mobile Enterprise Applications Guide

Release 9.2

JD Edwards EnterpriseOne Tools
Developing and Customizing Mobile Enterprise Applications Guide

Release 9.2

Part Number: E64170-15

Contents

Preface

Welcome to the *JD Edwards EnterpriseOne Tools Developing and Customizing Mobile Enterprise Applications Guide* . This guide has been updated for JD Edwards EnterpriseOne Tools release 9.2.1, 9.2.1.1, 9.2.1.2, and 9.2.2.

Audience

This guide is intended for application developers who are responsible for creating or customizing EnterpriseOne mobile enterprise applications.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc` .

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` or visit `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` if you are hearing impaired.

Related Information

For additional information about JD Edwards EnterpriseOne applications, features, content, and training, visit the JD Edwards EnterpriseOne pages on the JD Edwards Resource Library located at:

`http://learnjde.com`

For more information about Oracle MAF and EnterpriseOne mobile enterprise applications, see the following documents:

- *Oracle Fusion Middleware Developing Mobile Applications with Oracle Mobile Application Framework* documentation:

  `http://docs.oracle.com/middleware/maf210/mobile/index.html`
- *JD Edwards EnterpriseOne Application Interface Services Server Reference Guide*
- *JD Edwards EnterpriseOne Applications Mobile Enterprise Applications Implementation Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

Convention	Meaning
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1 Understanding This Guide

Understanding This Guide

Use this guide as a companion guide to the *Oracle Fusion Middleware Developing Mobile Applications with Oracle Mobile Application Framework Guide*, which describes how to develop mobile applications using Oracle Mobile Application Framework (MAF). Oracle MAF is the framework used to create mobile enterprise applications for JD Edwards EnterpriseOne. You can access the Oracle MAF guide here:

`http://docs.oracle.com/middleware/maf210/mobile/develop-maf/toc.htm`

The *JD Edwards EnterpriseOne Tools Developing and Customizing Mobile Enterprise Applications Guide* includes:

- An overview of the environment required for developing EnterpriseOne mobile enterprise applications, which includes Oracle MAF and JD Edwards EnterpriseOne-specific extensions and tools, referred to as JDE Mobile Helpers.

  See *Introduction to Mobile Enterprise Application Development* for more information.
- How to use the JDE Mobile Helpers with Oracle MAF to create custom EnterpriseOne mobile enterprise applications.

  See the following chapters for more information:

  - *Getting Started*
  - *Setting Up the Login Module*
  - *Performing AIS Form Service Calls*
- Step-by-step instructions on how to create a sample application, including how to add features with JDE Mobile Helpers.

  See *Creating a Sample Mobile Application* for more information.
- How to use EnterpriseOne mobile application archives (MAAs) to generate mobile application binaries for internal distribution.

  See *Extending Mobile Application Archives* for more information.

This guide also references JD Edwards EnterpriseOne Mobile Framework Java APIs for developing custom mobile enterprise applications. Descriptions of these APIs can be found in a Javadoc entitled *JD Edwards EnterpriseOne Mobile Framework Java API Reference* .

2 Introduction to Mobile Enterprise Application Development

Introduction to Mobile Enterprise Application Development

This chapter provides an overview of Oracle Mobile Application Framework (Oracle MAF) and the JD Edwards EnterpriseOne-specific tools and environment required to support the development of mobile enterprise applications (also simply referred to as mobile applications) for EnterpriseOne.

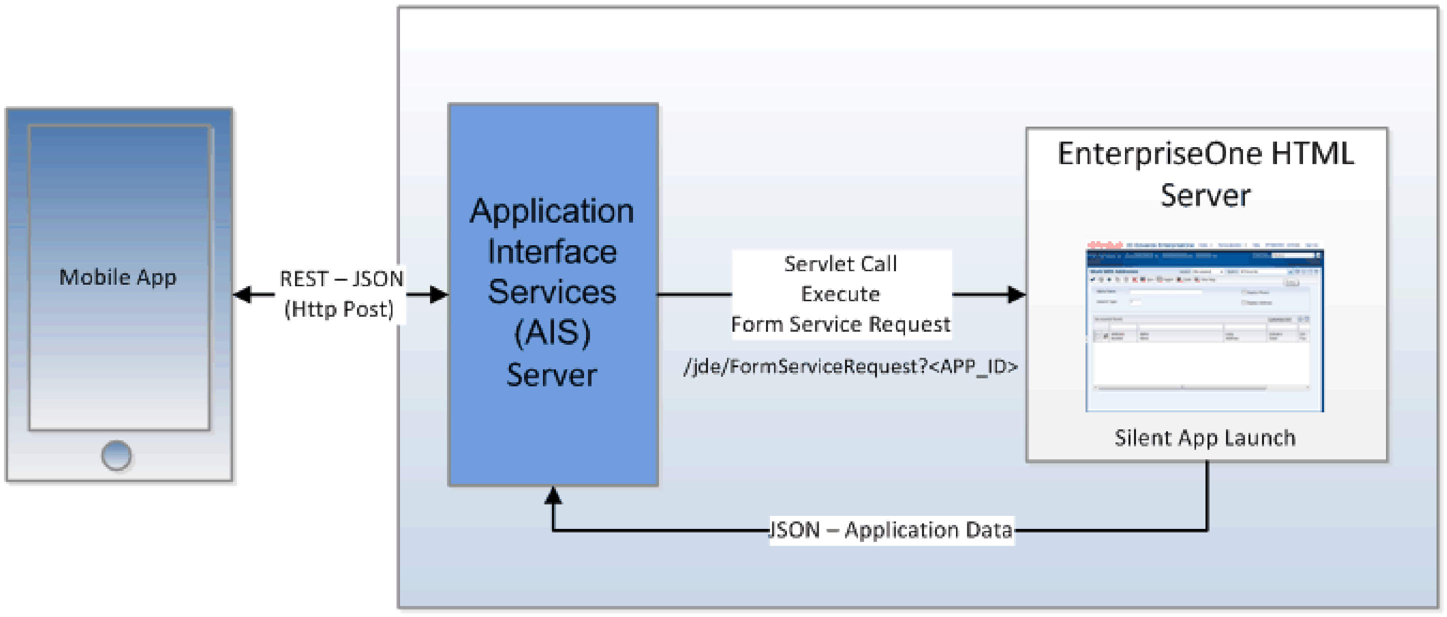
About the Runtime Architecture for EnterpriseOne Mobile Enterprise Applications

EnterpriseOne mobile enterprise applications require a light interface to manage EnterpriseOne data from mobile devices. The Application Interface Services (AIS) Server provides a JSON over REST interface to EnterpriseOne applications and forms through the EnterpriseOne HTML Server. The AIS Server exposes this interface to enable communication between mobile applications and EnterpriseOne.

The AIS Server includes support for JSON representation of Form Service Requests so mobile applications can easily format requests. The AIS Server submits these mobile application requests to the EnterpriseOne HTML Server.

The AIS Server maintains sessions for mobile applications. You can configure the session timeouts for the AIS Server through Server Manager.

The following illustration shows how the AIS Server functions as the interface between mobile applications and the EnterpriseOne HTML Server.



About Oracle Mobile Application Framework

Oracle Mobile Application Framework (MAF) is a solution that enables you to create mobile applications that run natively on both iOS and Android phones and tablets. EnterpriseOne mobile enterprise applications are built using Oracle MAF.

You should gain a thorough understanding of Oracle MAF before reading further. See the *Oracle® Mobile Application Framework Developing Mobile Applications with Oracle Mobile Application Framework Guide* , which you can access here:

https://docs.oracle.com/middleware/maf220/mobile/develop-maf/toc.htm

Understanding Developing Custom Mobile Enterprise Applications for EnterpriseOne

While Oracle provides many out-of-the-box EnterpriseOne mobile enterprise applications, the applications may not meet your specific business requirements. Therefore, Oracle provides a mobile application framework with tools that enable you to develop custom mobile applications for EnterpriseOne.

Also, if you have customized EnterpriseOne applications to meet your specific business requirements, you can extend the functionality of the mobile applications to interact with the customized EnterpriseOne applications. The mobile application framework enables you to extend data from custom EnterpriseOne applications to custom mobile applications by using existing business logic within your EnterpriseOne applications.

Before you develop custom mobile applications, you should plan all aspects of the process. The "About Developing Applications with Oracle Mobile Application Framework" section in the *Oracle Fusion Middleware Developing Mobile Applications with Oracle Mobile Application Framework Guide* provides a high-level description of activities that you should perform when building a MAF application. These activities include gathering requirements, designing, developing, deploying, testing and debugging, securing, enabling access to the server-side data, redeploying, retesting and debugging, and publishing. When developing custom EnterpriseOne mobile applications, pay special attention to the following activities:

- **Designing**. Determine which forms in EnterpriseOne the mobile application will access data from. If there are multiple forms, consider creating a batch request to gather data from multiple forms.
- **Developing**. Use the JD Edwards EnterpriseOne Mobile Framework APIs, Login Module, and JDE Mobile Helpers to help expedite the development of your mobile application. Refer to *Creating a Sample Mobile Application* in this guide for an example of how to develop a custom mobile application for EnterpriseOne using these utilities.
- **Securing**. The Login Module handles the authentication of EnterpriseOne mobile enterprise application users.
- **Publishing**. This is an important aspect of your deployment plan, as it typically involves publishing to an enterprise server, Apple App Store, or Google Play.

JDE Mobile Helpers

Oracle provides additional tools referred to as JDE Mobile Helpers that help simplify the development of mobile enterprise applications. JDE Mobile Helpers include:

- JDEMobileFramework.jar

  This JAR file contains the JD Edwards EnterpriseOne Mobile Framework APIs, a set of classes and API methods that enable the mobile application to manage (create, read, update, delete) data in EnterpriseOne through REST services.
- AIS Client Class Generator

  The AIS Client Class Generator is a JDeveloper extension that enables you to generate Application Controller foundational classes that are required by EnterpriseOne mobile applications.
- Login.jar

  The Login.jar provides a configuration page, login page, and a springboard. The springboard contains links to Legal Terms or the End User License Agreement (EULA), About information, and the Logout.
- about.properties

  This file is for configuring information displayed on the About page, including the application name, application version, and the application ID (which is part of enabling the application with EnterpriseOne application security). If you enable the springboard, you should provide these values so that they will appear on the about page.
- Resource Bundle

  The Resource Bundle contains text resources for the pages provided in the Login.jar.
- Javascript (JS) files and CSS files

  The Javascript and CSS files are dependencies of the JDEMobileFramwork.jar and the Login.jar. The Javascript provides an animated icon to show that the mobile application is processing while service calls are made. The

CSS provides an extension to the styling skin provided by Oracle MAF. It enables you to make adjustments to the style of the configuration, login, and springboard pages of your mobile application.

The Data Model

The data model for developing mobile enterprise applications includes foundation classes that hold the data retrieved from AIS services. These classes are specific to the EnterpriseOne applications accessed by a mobile enterprise application. In JDeveloper, you can include the classes in the Application Controller or the View Controller.

You use the AIS Client Class Generator to generate classes for the Application Controller and View Controller. To generate data classes for a form, in the AIS Client Class Generator, you define the service request information by identifying the form and the CRUD (create, read, update, delete) operation that you want the application form to perform.

See *"Using the AIS Client Class Generator" in the JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* for more information.

Form Service Requests

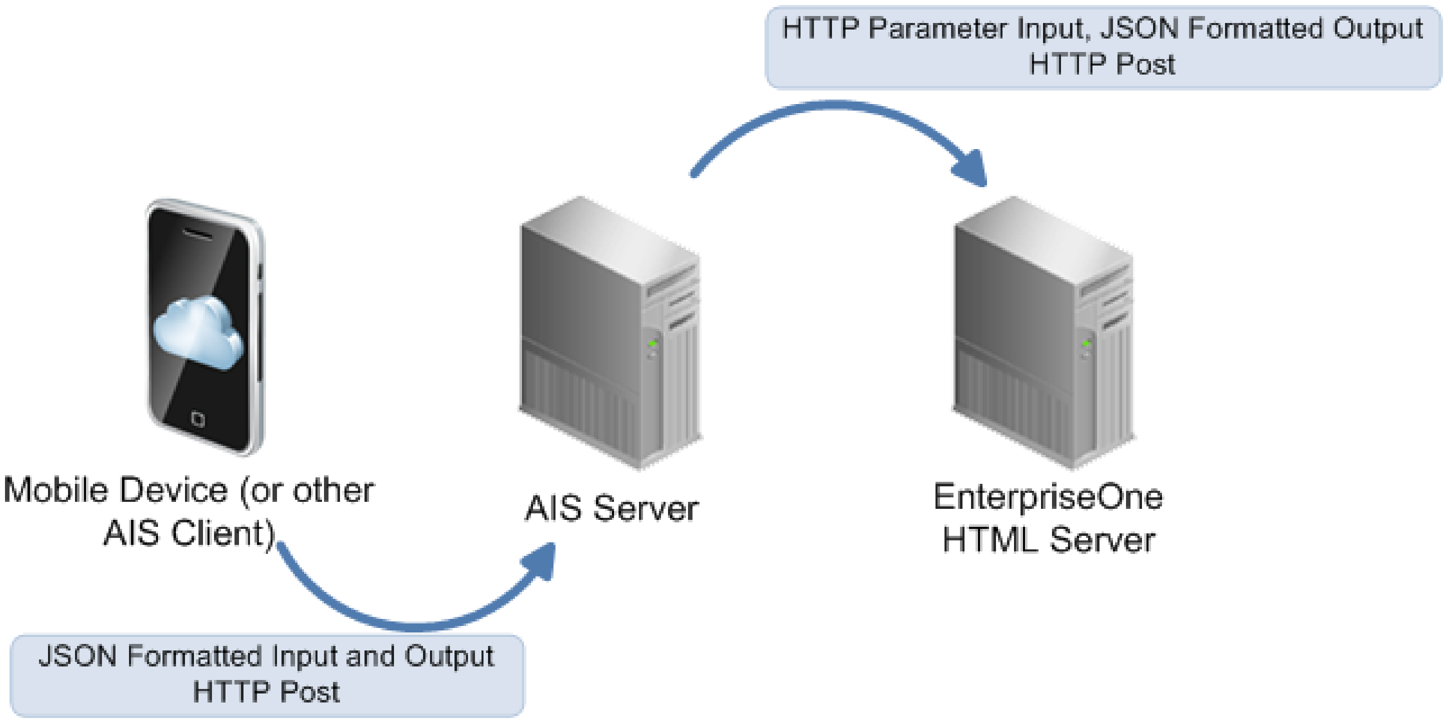
AIS Server calls are used to retrieve data from forms in the EnterpriseOne web client. These calls are referred to as form service requests. Mobile applications use form service requests to interact with EnterpriseOne web client forms. Form service requests, formatted as REST service calls that use POST, contain form service events or commands that invoke actions on an EnterpriseOne form.

By sending an ordered list of commands, a form service request can replicate the actions taken by an EnterpriseOne web client user, including populating fields, pressing buttons, and other actions. The form service request enables you to perform various operations on a single form. The URL for the form service request is:

```
http://<aisserver>:<port>/jderest/formservice
```

EnterpriseOne Rest Services Interface

The following illustration shows JSON input and output over HTTP Post:


HTTP Parameter Input, JSON Formatted Output
HTTP Post
Mobile Device (or other AIS Client)
AIS Server
EnterpriseOne HTML Server
JSON Formatted Input and Output
HTTP Post

This illustration shows the communication from the client (which can be a mobile device or other AIS client) to the AIS Server and the AIS Server's communication with the EnterpriseOne HTML server, where the EnterpriseOne forms run and the data is gathered. All client communication uses JSON formatted strings.

You can make REST calls directly to the AIS Server without using the JDE Mobile Framework APIs. Use a REST service testing tool to call AIS services directly by sending JSON text to the URL for the service. All services are accessed using URLs with this format: `http://<aisserver>:port/jderest/<uri>`, where uri is the path to the various types of services such as formservice, file, defaultconfig, and poservice. For a list of all services that are available on the AIS Server, see *Working with the EnterpriseOne REST Services Interface* in this guide.

Sample Application

This guide includes an appendix that provides step-by-step instructions on how to create a sample EnterpriseOne mobile application. As you read about the JDE Mobile Helpers and other features in this guide, you can refer to the steps in this appendix to see an example of how the features are used in the development of a mobile application.

Mobile Application Archives

Oracle provides mobile applications archives, which you can use to create your own iOS and Android artifacts. This enables you to integrate and control mobile applications internally within your company rather than connecting to a public application store.

You can create your own iOS or Android artifact by generating the mobile application from a mobile application archive (MAA), customizing it, and then publishing it as your own "new" mobile application.

Oracle Mobile Cloud Service Support in Mobile Application Archives

You can also use an MAA to create a mobile application that can be configured to work with Oracle Mobile Cloud Service. Oracle Mobile Cloud Service is a cloud-based service that provides a unified hub for developing, deploying, maintaining, monitoring, and analyzing your mobile applications and the resources that they rely on. For more information Oracle Mobile Cloud Service, see the *Oracle® Cloud Using Oracle Mobile Cloud Service* available at:

http://docs.oracle.com/cloud/latest/mobilecs_gs/MCSUA/title.htm

3 Getting Started

Getting Started

This chapter refers to certifications (MTRs) and prerequisites for developing and running EnterpriseOne mobile enterprise applications.

Minimum Technical Requirements for EnterpriseOne Mobile Enterprise Applications

For a list of the EnterpriseOne mobile enterprise applications and the minimum EnterpriseOne Tools release required to run them, see the following document on My Oracle Support (login required):

Information Center for JD Edwards EnterpriseOne Mobile Applications (Doc ID 1637232.2)

https://support.oracle.com/rs?type=doc&id=1637232.2

Prerequisites

To develop custom mobile applications, you must complete the following prerequisites:

- You must be running a minimum of EnterpriseOne Tools release 9.1.4.6 with an EnterpriseOne AIS Server configuration. The AIS Server enables communication between mobile enterprise applications and EnterpriseOne.

  See the *JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* .
- Download the latest JDE_Mobile_Framework package from the JD Edwards Update Center on My Oracle Support: *https://updatecenter.oracle.com/* .

  In the Update Center, enter "EnterpriseOne Mobile Enterprise Applications" in the Type field to locate the package.

  > **Note:** The Update Center also contains previous versions of this package. If you installed an earlier version and plan on using the sample mobile application or mobile application archives, see the "Before You Begin" in the following appendixes for important component compatibility information:
  > - *Creating a Sample Mobile Application*
  > - *Extending Mobile Application Archives*

  The JDE_Mobile_Framework package is delivered in a zip file, which contains the following files:
  - JDEMobileFramework.jar (JD Edwards EnterpriseOne Mobile Framework APIs)
  - jdemfResourceBundle.xlf (resource bundle)
  - Login.jar (Login Module)
  - Javascript and CSS files

- about.properties
- AISCGE 12c_v2.x.zip (AIS Client Class Generator extension for JDeveloper)

  This extension contains the AIS Client Class Generator, a tool that supports the creation of Application Controller foundational classes that are required by EnterpriseOne mobile applications. See "*Using the AIS Client Class Generator" in the JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* for instructions on how to install and use this extension.

The package also contains the following files:

- maf-2.x.x.zip

  This contains the Oracle MAF extension for JDeveloper, which is required to develop and customize mobile enterprise applications. In JDeveloper, you can install this file by selecting the "Install from Local File" option in the Check for Updates Wizard.
- JDEMobileSampleApplication.zip

  This is an **optional** file that contains the components for running a sample mobile application. *Creating a Sample Mobile Application* in this guide describes how to create this sample mobile application. You can use this sample mobile application download for comparison purposes.

- Complete the prerequisites listed in the Oracle MAF guide, which include:
  - Oracle JDeveloper
  - Oracle JDeveloper extension for Oracle MAF

    Note: This extension is included in the JDE_Mobile_Framework package.
  - Prerequisites specific to the iOS platform and Android platform

    See "Installing Mobile Application Framework with JDeveloper" in the Oracle® Mobile Application Framework documentation located at:

    https://docs.oracle.com/middleware/maf250/mobile/install/installing-mobile-application-framework-jdeveloper.htm#MAFIG24944

Additional Tasks to Implement EnterpriseOne Mobile Enterprise Applications

You must perform the tasks outlined in this section to run both out-of-the-box mobile applications and custom mobile applications.

This section contains the following topics:

- *Overview*
- *Defining Mobile Enterprise Application Versions for Mobile Users*
- *Specifying Processing and Display Options for Mobile Enterprise Applications*
- *Setting Up Security for EnterpriseOne Mobile Enterprise Applications*
- *Setting Up Security for Base EnterpriseOne Applications Used by Mobile Enterprise Applications*

Overview

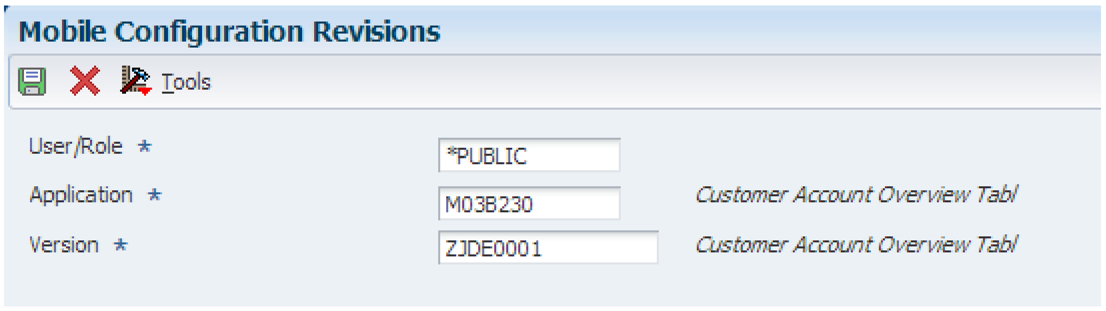
EnterpriseOne mobile enterprise applications are extensions of the base applications in the EnterpriseOne system. In EnterpriseOne, you must set up mobile enterprise application versions, as well as processing options and security for both the mobile enterprise applications and the base EnterpriseOne applications used by the mobile applications. These settings determine the EnterpriseOne users authorized to access mobile enterprise applications, as well as the data users can work with in their mobile enterprise applications.

Defining Mobile Enterprise Application Versions for Mobile Users

In EnterpriseOne, use the Mobile Version Management program (P98950M) to set up version information for mobile enterprise applications. You define which versions of the mobile enterprise application each user in your organization will use when they log into a mobile enterprise application. You can set up one default version for all users, or you can set up multiple versions for different roles or for specific users.

To access P98950M, click the Navigator menu, EnterpriseOne Menus, EnterpriseOne Life Cycle Tools, System Administration Tools, Mobile Management, and then Mobile Version Management.

1. On Mobile Version Management - Work With Mobile Configuration, click **Add**.



User/Role *	*PUBLIC	
Application *	M03B230	Customer Account Overview Tabl
Version *	ZJDE0001	Customer Account Overview Tabl

2. On Mobile Configuration Revisions, complete the following required fields and then click **OK**:
   - **User/Role.** Enter the user ID or the role that you want to assign to a specific version of a mobile application. If you want all users of the application to use the same version, enter *PUBLIC in this field.
   - **Application.** Enter the mobile program for which you are setting up a version. For example, enter M03B230 to set up a version for the Customer Account Overview Tablet application.
   - **Version.** Enter the version that you want the specified user or role to use when accessing the mobile application.

> **Note:** You cannot edit mobile configuration records. If you need to update a record, delete the record and enter a new record with the updated information.

Specifying Processing and Display Options for Mobile Enterprise Applications

Set up processing options to specify which versions of the base EnterpriseOne applications the mobile enterprise applications use. Also, some mobile applications use processing options or display preferences to determine what is displayed in the application.

See the *JD Edwards EnterpriseOne Applications Mobile Enterprise Applications Implementation Guide* for instructions on how to set up processing and display options.

Setting Up Security for EnterpriseOne Mobile Enterprise Applications

Set up security for mobile enterprise applications using the standard application security in the EnterpriseOne Security Workbench. Application security can be defined by user, role, or using *PUBLIC (all users). You set up application security for the *version* of the mobile enterprise application that you defined, as described in the *Defining Mobile Enterprise Application Versions for Mobile Users* section in this guide.

In the Security Workbench, the only application security option that applies to mobile enterprise applications is the "Run" security option.

For instructions on how to set up application security in EnterpriseOne, see *"Managing Application Security" in the JD Edwards EnterpriseOne Tools Security Administration Guide* .

For a list of mobile enterprise applications that you need to secure, see the *JD Edwards EnterpriseOne Applications Mobile Enterprise Applications Implementation Guide* .

Setting Up Security for Base EnterpriseOne Applications Used by Mobile Enterprise Applications

In addition to setting up permissions to access EnterpriseOne mobile enterprise applications, you must make sure that mobile users have permissions to access the base EnterpriseOne applications and application data that the mobile enterprise applications use.

In the Enterpriseone Security Workbench, the following types of security applied to base EnterpriseOne applications persist to mobile enterprise applications:

- Application security
- Exclusive application security
- Row security

  If row security is defined that prevents users from seeing certain data in the base EnterpriseOne application, mobile users will not be able to see the data in the mobile enterprise application.

For more information about how to review and set up security records for the types of security in the preceding list, see *"Setting Up Authorization Security with Security Workbench" in the JD Edwards EnterpriseOne Tools Security Administration Guide* .

For a list of base EnterpriseOne applications used by each mobile enterprise application, see the *JD Edwards EnterpriseOne Applications Mobile Enterprise Applications Implementation Guide* .

4 Setting Up the Login Module

Setting Up the Login Module

This chapter describes how to use the Login Module to manually configure the user login and logout for a mobile application.

Before You Begin

Before you can set up the Login Module for your mobile application, you have to:

- Create the mobile application in JDeveloper.

  The instructions on how to create a sample application include the steps for creating a new mobile application. See *Creating a New Mobile MAF Application* for more information.
- Configure the JDEMobileFramework.jar for the mobile application.

  The sample application instructions include the JDEMobileFramework.jar configuration steps as well. See *Including the JDEMobileFramework.jar* for more information.

Setting Up the Login Module

The Login Module is provided in the Login.jar file.

> **Note:** An Oracle MAF license is required in order to use the Login.jar (Login Module) in production-ready mobile applications.

Setting up the Login Module includes the following tasks:

- *Pointing to the Login.jar*
- *Making the Login Module the First Feature in Your Mobile Application*
- *Verifying the LifeCycleListenerImpl Activation*
- *Setting the defaultFeature*
- *Overriding the Login Values from Your Mobile Application*

Pointing to the Login.jar

To point to the Login.jar:

1. In JDeveloper, click the **Application** drop-down and select **Application Properties**.
2. Select **Libraries and Classpath** and then click the **Add JAR/Directory** button to locate the Login.jar file on your local file system.

   The Login.jar is part of the JDE_Mobile_Framework_1.0.0 download.
3. After you locate the Login.jar, click **Open**.

4. Click **OK** to save the properties.

Making the Login Module the First Feature in Your Mobile Application

To make the Login Module the first feature in your mobile application:

1. In the Application Resources panel, double-click the **maf-application.xml** to open it.
2. Select the **Feature References** tab, and then click the green plus sign to add a feature reference.
3. In the Id drop-down menu, select **com.oracle.e1.jdemf.login** and click **OK**.
4. Use the blue arrow to the right to move the login feature to the top of the list.

Verifying the LifeCycleListenerImpl Activation

You must verify that the LifeCycleListenerImpl is activated before setting the defaultFeature or overriding your login values.

To do so:

1. In the Application Resources panel, under **Descriptors > ADF META-INF**, double click **maf-application.xml**.
2. Select the **Application** tab and then click the magnifying glass next to **Lifecycle Event Listener**.
3. Navigate to LifeCycleListenerImpl in the hierarchy, which should be:

   ```
   application.LifeCycleListenerImpl
   ```
4. Click **OK**.

Setting the defaultFeature

You must set the default feature in your application so that the Login page can successfully navigate to your default page.

To do so:

1. In the Projects panel, expand **ApplicationController > Application Sources > application**, and double-click **LifeCycleListenrImpl.java**.
2. Locate a method that looks like the following method:

   ```
   public void start()
     {
       // Add code here...
     }
   ```
3. Replace the code in the method with the following code, where the value in quotes is the Feature ID of your applications main feature:

   ```
   public void start()
     {
       LoginConfiguration.setDefaultFeature("myfeatureId");
     }
   ```

Overriding the Login Values from Your Mobile Application

While developing your mobile application, you typically run the mobile application multiple times for testing. To make the testing process easier, you can override the login values.

To do so:

1. On the LifeCycleListenrImpl.java page, locate a method that looks like the following method:

   ```
   public void start()
     {
   ```

```
          // Add code here...
        }
```

2. Replace the code in the method with the following code, where the value in quotes is the Feature ID of your applications main feature:

   ```
   public void start()
   {
     LoginConfiguration.setCredentials("jde", "jde");
   ```

   This code will override the user name and password on the login screen. Depending on the values that you need to override, use one of the following parameters to invoke this method:

   - **`LoginConfiguration.setCredentials(username, password);`**
   - **`LoginConfiguration.setCredentials(username, password, environment, role);`**
   - **`LoginConfiguration.setCredentials(username, password, environment, role, jasserver);`**

Configuring the Logout

This section describes how to manually configure the logout if you are not using the springboard for the logout. The steps on how to use the springboard are located in the section that describes how to create a sample mobile application. See *Creating a Sample Mobile Application* for more information.

To configure the mobile application logout, you call the JDEmfUtilities.logout() method. To enable your mobile application to call it, place this call in a method of your DC class. This method returns the user to the login screen. When the default feature is invoked after logging in again, it will be in a new state.

```
public static void logout(){
JDEmfUtilities.logout();
}
```

To place a Logout button on your screen, regenerate your data control from your DC class. You can now drag the item logout() onto your form.

5 Performing AIS Form Service Calls

Understanding JD Edwards EnterpriseOne Mobile Framework APIs

The JD Edwards EnterpriseOne Mobile Framework APIs provide Java classes and methods that enable users to call REST services on the AIS Server. There are APIs that handle login authentication and authorization with the AIS Server, APIs for form service requests and media objects, as well as APIs for retrieving processing option values.

The JD Edwards EnterpriseOne Mobile Framework APIs have a dependency on Oracle MAF. They do not function outside of an Oracle MAF environment.

See the *Prerequisites* section in this guide for information on how to obtain the APIs. A description of the APIs is available in the *JD Edwards EnterpriseOne Mobile Framework Java API Reference* Javadoc located at:

http://docs.oracle.com/cd/E53430_01/EOTMP/index.html

With EnterpriseOne Tools release 9.2.1.2, the JD Edwards EnterpriseOne Mobile Framework Java API Reference was updated with classes that enable mobile applications to request EnterpriseOne Watchlist data.

Understanding AIS Server Capabilities

The AIS Server exposes various capabilities that client applications may or may not depend on. If your mobile application requires a certain capability, you must include it in the list of required capabilities in the about.properties file.

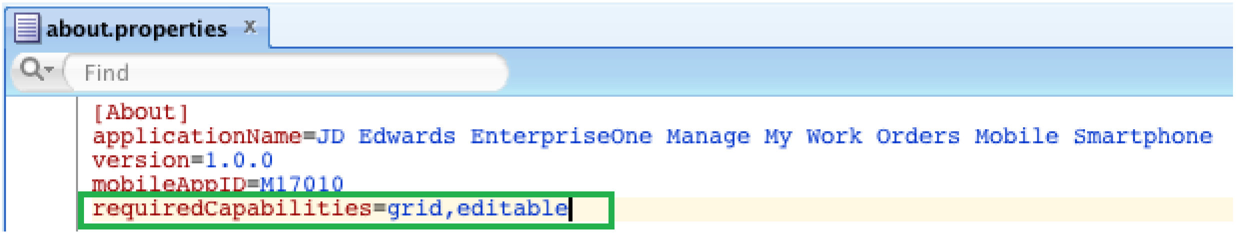
If you indicated in the about.properties file that you have a required capability, the Login Module verifies that capability is available when the mobile application launches. If the capability is not available, the application returns an error message. If the capability is available, the application continues to the login screen.

You can access the AIS Server capabilities using the following URL:

```
http://<AIS Server>:<Port>/jderest/defaultconfig
```

You can also find a complete list of AIS Server capabilities in the *"AIS Server Capabilities and Services" section in the JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* .

The following example shows the grid and editable capabilities listed in the about.properties:



```
[About]
applicationName=JD Edwards EnterpriseOne Manage My Work Orders Mobile Smartphone
version=1.0.0
mobileAppID=M17010
requiredCapabilities=grid,editable
```

Understanding Form Service Requests

This section contains the following topics:

Overview

AIS Server calls that retrieve data from forms in the EnterpriseOne web client are referred to as form service requests. Mobile applications use form service requests to interact with EnterpriseOne web client forms. Form service requests, formatted as REST service calls that use POST, contain form service events or commands that invoke actions on an EnterpriseOne form.

A form service request enables you to perform various operations on a single form. By sending an ordered list of commands, a form service request can replicate the actions taken by an EnterpriseOne web client user, including populating fields, pressing buttons, and other actions.

To send a form service request to the AIS Server, send a POST to the following URL and send JSON in the body:

```
http://<AIS Server>:<Port>/formservice
```

If testing with a REST testing tool, you can send JSON directly. If using the JDE Mobile Helpers in a mobile application, you need to specify only the URI when calling the jdeRestServiceCall. The URI is "formservice" and you can use the static variable, for example:

```
JDERestServiceProvider.FORM_SERVICE_URI
```

Events Used in a Form Service Request

The following table lists the events that you can include in a form service request and describes the action that each event performs.

Event	Description	Parameters (and example values)
Set Control value	Sets the value of a control on a form, like filter fields or any other form control.	controlID ("25")

Event	Description	Parameters (and example values)
		value ("Bob" or "01/01/2015")
Set QBE Value	Sets the value of a QBE column.	controlID ("1[42]" or "1_2[25]") value ("Jill" or "55")
Set Checkbox Value	Sets the value of a check box.	controlID ("77") value ("on" or "off")
Set Radio Button	Sets the value of the radio button.	controllID ("87") value ("87")
Set Combo Value	Sets the value of a combo box entry.	contolID ("125") value (2) - Index of the entry.
Do Action	Presses a button or Hyper Item.	controlID ("156")
Select Row	Selects the specified row in a grid.	controlID ("1.30") - ID of the grid, dot (.), row index (zero based).
Select All Rows*	Select all rows in the specified grid (if multiple selection is allowed).	controlID ("1") - ID of the grid.
Un Select All Rows*	Deselects all rows in the specified grid (if multiple selection is allowed).	controlID ("1") - ID of the grid.
Un Select Row*	Deselects the specified row in a grid.	controlID ("1.30") - ID of the grid, dot (.), row index (zero based).
Click Grid Cell**	Clicks the hyperlink in a grid cell if the cell is enabled as a link.	controlID ("1.5.22") - ID of the grid, dot (.), row index, dot (.), grid column ID.

*These events are available only with the selectAllGridRows capability. The JDEMobileFramework API requires these events to be in a try block because they throw a Capability Exception.

**This event is available only with the gridCellClick capability.

Using the Form Service Request Event in FDA

The Form Service Request event is available within FDA for each form. This event occurs after the Post Dialog Initialized event, but before any of the form actions requested in the form service call execute. This event enables you to perform some operations, or business logic, when you know the form that is being called from a form service request.

This event also provides access to the requested form service actions, referred to as CRUD (Create, Read, Update, or Delete) actions, by using the "Get Form Service Request Action" system function. This enables you to create additional logic based on the value sent in the form service request.

Using the Form Service Request event in FDA should be secondary to using events (actions) provided in the Form Service Request from the mobile application. Oracle recommends that you only use the FDA event if you cannot accomplish a desired result with the form action events.

Placing Events in the Proper Order

Place the events in the form service request in the order you want them to execute, for example, populate a filter field value and then press the Find button. Remember that the FDA Form Service Request event occurs before the events you add to this list. Do not set the "Find On Entry" option when using the event model; the extra "find" is not necessary because it executes before the events you requested.

Considering Hidden Filters and Hidden QBE

By default, values are not written to hidden filter fields or hidden QBE columns. You must use the Form Service Request event to show the fields and columns first. Then values can be written to these fields and subsequently applied to the query.

Events on Power Forms

The Form Service Request event and other events that perform actions in a form are also available on power forms so that you can populate a subform value or press a button on a subform.

Control ID Notation for Return Control IDs

You can use the Property Browser in FDA to identify control IDs for fields on each EnterpriseOne form. You can also find control IDs using the Item Help option in the form in the EnterpriseOne web client. In the EnterpriseOne web client form, click the Help button (question mark in the upper right corner of a form) and then click the Item Help option to access field-level help. With the field level help activated, you can click in a field or column to access the control ID and business view information, which is displayed under the Advanced Options section.

For fields on the main form, the control ID will be a single value, such as 25.

Grids also have control IDs. For a traditional form, the grid ID is usually 1. For power forms, subforms, and reusable subforms the grid ID is typically a value other than 1.

The columns within a grid also have unique IDs and are often referenced in conjunction with the grid ID. For example column 28 and 29 in grid 1 would be 1[28,29].

Power forms have more complex IDs. The fields on the main power form are represented with single values. The fields on a subform are complex with an underscore separating them. So field 6 on subform 12 is 12_6. The ID of a re-usable subform is available when viewing the power form that the subform is used on. The IDs of individual fields, a grid, or columns on a re-usable subform is shown in FDA when viewing the subform directly; you cannot get these values when viewing the subform alias.

The returnControlIDs string is bar delimited, without a starting or ending bar.

Example - Requesting fields and grid columns on a traditional form.

```
formRequest.setReturnControlIDs("19|20|60|125|1[45,49,88]");
```

In this example, `19|20|60|125` represent field control IDs.

`1[45,49,88]` represents columns in the grid.

Example - Requesting main form fields, subform fields, main form grid columns, and subform grid columns.

```
formRequest.setReturnControlIDs("33|34|17[24,26,28]|50_45|50_53|50_9[35,39,41]");
```

In this example, `33|34` represent fields on the main form.

`50_45|50_53` represent fields on the subform.

`17[24,26,28]` represent main form grid columns.

`50_9[35,39,41]` represent subform grid columns.

Example of JSON Code in a Form Service Request

The sample code in *Example - Executing EnterpriseOne Actions - JSON* is an example of JSON code in a form service request that executes EnterpriseOne actions in the following order:

1. Open the Find/Browse form in P01012.
2. Enter a value in a QBE field.
3. Enter a value in a field control.
4. Select two check boxes.
5. Click the Find button.

Example - Executing EnterpriseOne Actions - JSON

```
 {
    "token": "044BlLYkCUcjQGRxvR3r
+LH27liC6l6psFHOTp9whmkPxE=MDE4MDA2MTYxMDIwOTQ1MDU2NTc0NDY0U29hcFVJMTM4NDQ0NjU2NTUwNQ==",
    "version": "ZJDE0001",
    "formActions": [
        {

            "command": "SetQBEValue",
            "value": "E",
            "controlID": "1[50]"
        },
        {
            "command": "SetControlValue",
            "value": "Al*",
            "controlID": "58"
        },
        {
            "command": "SetCheckboxValue",
            "value": "on",
            "controlID": "62"
        },
        {
            "command": "SetCheckboxValue",
            "value": "on",
            "controlID": "63"
        },
        {
            "command": "DoAction",
            "controlID": "15"
        }
    ],
    "deviceName": "REST Service Testing Tool",
    "formName": "P01012_W01012B"
}
```

Example - Executing EnterpriseOne Actions - JSON Response

```
{
    "fs_P01012_W01012B": {
        "title": "Work With Addresses",
        "data": {
            "lblSearchType_53": {
                "id": 53,
                "editable": false,
                "value": "Search Type",
                "title": "Search Type",
                "dataType": 2
            },
            "txtSearchType_54": {
                "id": 54,
                "editable": true,
                "value": "*",
                "internalValue": "null",
                "title": "Search Type",
                "assocDesc": "",
                "staticText": "Search Type",
                "dataType": 2
            },
            "lblAlphaName_57": {
                "id": 57,
                "editable": false,
                "value": "Alpha Name",
                "title": "Alpha Name",
                "dataType": 2
            },
            "txtAlphaName_58": {
                "id": 58,
                "editable": true,
                "value": "Allen*",
                "internalValue": "Allen*",
                "title": "Alpha Name",
                "staticText": "Alpha Name",
                "dataType": 2
            },
            "lblDL01_66": {
                "id": 66,
                "editable": false,
                "value": "",
                "title": "",
                "dataType": 2
            },
            "chkDisplayAddress_63": {
                "id": 63,
                "editable": true,
                "value": "on",
                "internalValue": "1",
                "title": "Display Address",
                "dataType": 1
            },
            "chkDisplayPhone_62": {
                "id": 62,
                "editable": true,
                "value": "on",
                "internalValue": "1",
                "title": "Display Phone",
                "dataType": 1
            },
            "gridData": {
                "titles": {
                    "col_19": "Address Number",
                    "col_20": "Alpha Name",
                    "col_40": "Address Line 1",
                    "col_44": "City",
                    "col_81": "Prefix",
                    "col_46": "Phone Number",
                    "col_47": "Phone Type",
                    "col_48": "Long Address",
                    "col_49": "Industry Class",
                    "col_50": "Sch Typ",
                    "col_51": "Tax ID"
                },
                "rowset": [
                    {
                        "rowIndex": 0,
                        "MOExist": false,
                        "mnAddressNumber_19": {
                            "id": 19,
                            "editable": false,
                            "value": "576",
                            "internalValue": 576,
                            "title": "Address Number",
                            "dataType": 9
                        },
                        "sAlphaName_20": {
                            "id": 20,
                            "editable": false,
                            "value": "Allen",
                            "internalValue": "Allen",
                            "title": "Alpha Name",
                            "dataType": 2
                        },
                        "sAddressLine1_40": {
                            "id": 40,
                            "editable": false,
                            "value": " ",
                            "internalValue": " ",
                            "title": "Address Line 1",
                            "dataType": 2
                        },
                        "sCity_44": {
                            "id": 44,
                            "editable": false,
                            "value": " ",
                            "internalValue": " ",
                            "title": "City",
                            "dataType": 2
                        },
                        "sPrefix_81": {
                            "id": 81,
                            "editable": false,
                            "value": "",
                            "internalValue": "",
                            "title": "Prefix",
                            "dataType": 2
                        },
                        "sPhoneNumber_46": {
                            "id": 46,
                            "editable": false,
                            "value": "",
                            "internalValue": "",
                            "title": "Phone Number",
                            "dataType": 2
                        },
                        "sPhoneType_47": {
                            "id": 47,
                            "editable": false,
                            "value": "",
                            "internalValue": "",
                            "title": "Phone Type",
                            "dataType": 2
                        },
                        "sLongAddress_48": {
                            "id": 48,
                            "editable": false,
                            "value": " ",
                            "internalValue": " ",
                            "title": "Long Address",
                            "dataType": 2
                        },
                        "sIndustryClass_49": {
                            "id": 49,
                            "editable": false,
                            "value": " ",
                            "internalValue": " ",
                            "title": "Industry Class",
                            "dataType": 2
                        },
                        "sSchTyp_50": {
                            "id": 50,
                            "editable": false,
                            "value": "E",
                            "internalValue": "E",
                            "title": "Sch Typ",
                            "dataType": 2
                        },
                        "sTaxID_51": {
                            "id": 51,
                            "editable": false,
                            "value": " ",
                            "internalValue": " ",
                            "title": "Tax ID",
                            "dataType": 2
                        }
                    }
                ],
                "summary": {
                    "records": 1,
                    "moreRecords": false
                }
            }
        },
        "errors": [],
        "warnings": []
    },
    "stackId": 2,
    "stateId": 1,
    "rid": "f199d7dd4210b9af",
    "currentApp": "P01012_W01012B_ZJDE0001",
    "sysErrors": []
}
```

Example of API Methods for a Form Service Request

Oracle provides API methods that you can use to set the commands when coding mobile applications.

Note: When setting a date field value, use the form field or QBE Date methods that use the java.util.Date for input. These methods format the date value into the proper format for data entry in EnterpriseOne.

Example - API Methods for Setting Commands

```
        FormRequest formRequest = new FormRequest();

        formRequest.setFormName("P01012_W01012B");
        formRequest.setVersion("ZJDE0001");


 //create event holder
        FSREvent myFSREvent = new FSREvent();


        //add actions in order
        myFSREvent.setQBEValue("1[50]", searchType);
        myFSREvent.setFieldValue("58", name);
        myFSREvent.checkBoxChecked ("62");
        myFSREvent.checkBoxChecked ("63");
        myFSREvent.doControlAction("15");

  //add event holder to the form request
        formRequest.addFSREvent(myFSREvent);


        // Execute SEND and RECEIVE operation
        try {

            JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
            String postData = jsonObject.toString();
            String response = JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST,
 JDERestServiceProvider.FORM_SERVICE_URI);

            P01012_W01012B_FormParent newFormParent =

 ((P01012_W01012B_FormParent)JSONBeanSerializationHelper.fromJSON(P01012_W01012B_FormParent.class,
                                                                                 response));
}
```

Grid Action Events

In addition to interacting with fields on the form, you can interact with grids using grid action events. If you use a grid action event, you must include "grid" as a required capability in the about.properties. See *Understanding AIS Server Capabilities* for more information.

The types of grid action events include:

- Selecting grid rows

  This action enables you to delete records in the grid by sending a row select event, followed by a delete button press event, and then finally an OK button press event. This is the exact sequence that a user would follow to delete a record in an EnterpriseOne application.
- Inserting grid rows

  This action enables you to insert one or more rows into a grid, setting the column value for each row. This includes text entry columns, drop-down columns, or check box columns. You must include an OK button pressed event to commit the inserts.
- Updating grid rows

  This action enables you to update one or more existing grid rows by setting the column values for each row. This includes text entry columns, drop-down columns, or check box columns. You must include an OK button pressed event to commit the updates.

The following table describes the commands that you can use in grid column events to set values for a cell in a grid insert or update event:

Grid Column Event	Description	Parameters
Set Grid Cell Value	Sets the value of a cell in a grid.	"value": "720", "command": "SetGridCellValue", "columnID": "28"
Set Grid Combo Value	Sets the value of a drop-down column in a grid. The value that you send is in the "Code" for the UDC associated with the column.	"value": "ABC" "command": "SetGridComboValue", "columnID": "43"

Example of Grid Action Events

This section provides examples of grid action events in both JSON and Oracle MAF code.

The sample code in *Example - Selecting Grid Rows - JSON* is an example of JSON that deletes a phone number in the third row of a grid. It is important to note:

- The row index is zero based.
- You must get the row index based on a previous fetch (since rows may be hidden and the index may not be consecutive).
- By sending 3 form actions, first select row 3, then selecting the Delete button, and then selecting the OK button.
- The form inputs will get the correct set of phone records for address number 6001, who's who line 0.
- The formServiceAction code is a U for update, so the form is in update mode.

Example - Selecting Grid Rows - JSON

```
{
    "token": "0443HC90ZH4pq9CScdvJ+nkecflSJI9q
+YGbc7lXrGZ7So=MDE5MDA2ODQ4MjcyMDk2MTUwMjg0NDkyOFNvYXBVSTEzOTIwNzE5NzY4NzE=",

    "formActions": [

            {
             "command": "SelectRow",
             "controlID": "1.3"
        }
        ,
        {
            "command": "DoAction",
            "controlID": "59"
        },
        {
            "command": "DoAction",
            "controlID": "4"
        }
    ],
    "formInputs": [
        {
            "value": "6001",
            "id": "4"
        },
        {
            "value": "0",
            "id": "5"
        }
    ],

    "formServiceAction": "U",
    "deviceName": "RESTclient",
    "formName": "P0115_W0115A"
}
```

Example - Selecting Grid Rows - JSON Response

```
{
    "fs_P0115_W0115A": {
        "title": "Phone Numbers",
        "data": {
            "lblDL01_71": {
                "id": 71,
                "editable": false,
                "value": "Ray Allen",
                "title": "Ray Allen",
                "dataType": 2
            },
            "lblWhosWhoLine_52": {
                "id": 52,
                "editable": false,
                "value": "Who's Who Line",
                "title": "Who's Who Line",
                "dataType": 2
            },
            "txtAddressNumber_7": {
                "id": 7,
                "editable": false,
                "value": "6001",
                "internalValue": 6001,
                "title": "Address Number",
                "assocDesc": "Allen, Ray",
                "staticText": "Address Number",
                "dataType": 9
            },
            "lblDL01_54": {
                "id": 54,
                "editable": false,
                "value": "Allen, Ray",
                "title": "Allen, Ray",
                "dataType": 2
            },
            "gridData": {
                "titles": {
                    "col_28": "Prefix",
                    "col_29": "Phone Number",
                    "col_27": "Phone Type",
                    "col_66": "Phone Type Description",
                    "col_26": "Line Number"
                },
                "rowset": [
                    {
                        "rowIndex": 0,
                        "MOExist": false,
                        "sPrefix_28": {
                            "id": 28,
                            "editable": true,
                            "value": "303",
                            "internalValue": "303",
                            "title": "Prefix",
                            "dataType": 2
                        },
                        "sPhoneNumber_29": {
                            "id": 29,
                            "editable": true,
                            "value": "334-4000",
                            "internalValue": "334-4000",
                            "title": "Phone Number",
                            "dataType": 2
                        },
                        "sPhoneType_27": {
                            "id": 27,
                            "editable": true,
                            "value": "HOM",
                            "internalValue": "HOM",
                            "title": "Phone Type",
                            "dataType": 2
                        },
                        "sPhoneTypeDescription_66": {
                            "id": 66,
                            "editable": false,
                            "value": "Home",
                            "internalValue": "Home",
                            "title": "Phone Type Description",
                            "dataType": 2
                        },
                        "mnLineNumber_26": {
                            "id": 26,
                            "editable": false,
                            "value": "1",
                            "internalValue": 1,
                            "title": "Line Number",
                            "dataType": 9
                        }
                    },
                    {
                        "rowIndex": 1,
                        "MOExist": false,
                        "sPrefix_28": {
                            "id": 28,
                            "editable": true,
                            "value": "303",
                            "internalValue": "303",
                            "title": "Prefix",
                            "dataType": 2
                        },
                        "sPhoneNumber_29": {
                            "id": 29,
                            "editable": true,
                            "value": "555-1212",
                            "internalValue": "555-1212",
                            "title": "Phone Number",
                            "dataType": 2
                        },
                        "sPhoneType_27": {
                            "id": 27,
                            "editable": true,
                            "value": "CAR",
                            "internalValue": "CAR",
                            "title": "Phone Type",
                            "dataType": 2
                        },
                        "sPhoneTypeDescription_66": {
                            "id": 66,
                            "editable": false,
                            "value": "Car or Mobile",
                            "internalValue": "Car or Mobile",
                            "title": "Phone Type Description",
                            "dataType": 2
                        },
                        "mnLineNumber_26": {
                            "id": 26,
                            "editable": false,
                            "value": "2",
                            "internalValue": 2,
                            "title": "Line Number",
                            "dataType": 9
                        }
                    }
                ],
                "summary": {
                    "records": 2,
                    "moreRecords": false
                }
            },
            "lblAddressNumber_6": {
                "id": 6,
                "editable": false,
                "value": "Address Number",
                "title": "Address Number",
                "dataType": 9
            },
            "txtWhosWhoLine_32": {
                "id": 32,
                "editable": false,
                "value": "0",
                "internalValue": 0,
                "title": "Who&#39;s Who Line",
                "assocDesc": "Ray Allen",
                "dataType": 9a
            }
        },
        "errors": [],
        "warnings": []
    },
    "stackId": 5,
    "stateId": 1,
    "rid": "c2a9c1c93a6874f0",
    "currentApp": "P0115_W0115A",
    "sysErrors": []
}
```

Example - Selecting Grid Rows - MAF Application Code

This sample code performs the same delete operation as the JSON request example in the preceding section; it deletes a single phone number in a grid of phone numbers.

```
public void deletePhone(int key) {

        AdfmfJavaUtilities.setELValue("#{pageFlowScope.errors}", "false");
        FormRequest formRequest = new FormRequest();

        formRequest.setFormName("P0115_W0115A");
        formRequest.setFormServiceAction("U");

        formRequest.addToFISet("4", addressNumber);
        formRequest.addToFISet("5", "0");

        FSREvent fsrEvent = new FSREvent();

        //get currently selected row
        P0115_W0115A_GridRow selectedRow = getSelectedPhonebyKey(key);

        fsrEvent.selectRow("1", selectedRow.getRowIndex());

        //press Delete button
        fsrEvent.doControlAction("59");


        //press OK button
        fsrEvent.doControlAction("4");

        //add the FSR event to the request
        formRequest.addFSREvent(fsrEvent);


        // Execute SEND and RECEIVE operation
        try {
            // For POST request, set data payload is header delimited with | and service input class

            JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
            String postData = jsonObject.toString();

            String response = JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST,
 JDERestServiceProvider.FORM_SERVICE_URI);
            P0115_W0115A_FormParent tempFormParent =
                ((P0115_W0115A_FormParent)JSONBeanSerializationHelper.fromJSON(P0115_W0115A_FormParent.class,
                                                                                response));

            if(tempFormParent.getFs_P0115_W0115A().getErrors() != null &&
 tempFormParent.getFs_P0115_W0115A().getErrors().length>0){

                AdfmfJavaUtilities.setELValue("#{pageFlowScope.errors}", "true");
            }else{


            p0115_W0115A_FormParent.getFs_P0115_W0115A().getData().getGridData().setRowsetList
            (tempFormParent.getFs_P0115_W0115A().getData().getGridData().retrieveRowsetList());
            p0115_W0115A_FormParent.getFs_P0115_W0115A().getData().getGridData().setSummary
            (tempFormParent.getFs_P0115_W0115A().getData().getGridData().getSummary());

            }


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }


    }
```

Example - Insert Rows - JSON

This sample code is an example of adding two phone numbers with two form actions: a grid action that adds two rows followed by an OK button selection. The form inputs will get the correct set of phone records for address number 6001, who's who line 0. Also, it is important to note that the formServiceAction code is a U for update, which indicates that the form is in update mode.

```
{"token": "044bO2/
lCT8FViW5A0Sm5GqcqU3P8BB2kwUv0bZzG84YYU=MDE4MDA2NTIyNTk1NjQyNTc1MjQ2MzM2U29hcFVJMTM5MjE0OTA4MjYyMA==",
      "formInputs": [
        {
            "value": "6001",
            "id": "4"
        },
        {
            "value": "0",
            "id": "5"
        }
    ],
    "formServiceAction": "U",

    "formActions": [
        {
            "gridAction":
                {
                    "gridID": "1",
                    "gridRowInsertEvents": [
                        {
                            "gridColumnEvents": [
                                {
                                    "value": "720",
                                    "command": "SetGridCellValue",
                                    "columnID": "28"
                                },
                                {
                                    "value": "331-4014",
                                    "command": "SetGridCellValue",
                                    "columnID": "29"
                                },
                                {
                                    "value": "CAR",
                                    "command": "SetGridCellValue",
                                    "columnID": "27"
                                }
                            ]
                        },
                        {

                            "gridColumnEvents": [
                                {
                                    "value": "303",
                                    "command": "SetGridCellValue",
                                    "columnID": "28"
                                },
                                {
                                    "value": "421-1010",
                                    "command": "SetGridCellValue",
                                    "columnID": "29"
                                },
                                {
                                    "value": "HOM",
                                    "command": "SetGridCellValue",
                                    "columnID": "27"
                                }
                            ]
                        }
                    ]
                }
        },
        {

            "command": "DoAction",
            "controlID": "4"
        }

    ],
    "deviceName": "RESTclient",
    "formName": "P0115_W0115A"
}
```

Example - Insert Rows - JSON Response

```
{
   "fs_P0115_W0115A":    {
      "title": "Phone Numbers",
      "data":       {
         "lblDL01_71":          {
            "id": 71,
            "editable": false,
            "value": "Ray Allen",
            "title": "Ray Allen",
            "dataType": 2
         },
         "lblWhosWhoLine_52":          {
            "id": 52,
            "editable": false,
            "value": "Who's Who Line",
            "title": "Who's Who Line",
            "dataType": 2
```

```
          },
          "txtAddressNumber_7":          {
             "id": 7,
             "editable": false,
             "value": "6001",
             "internalValue": 6001,
             "title": "Address Number",
             "assocDesc": "Allen, Ray",
             "staticText": "Address Number",
             "dataType": 9
          },
          "lblDL01_54":          {
             "id": 54,
             "editable": false,
             "value": "Allen, Ray",
             "title": "Allen, Ray",
             "dataType": 2
          },
          "gridData":          {
             "titles":             {
                "col_28": "Prefix",
                "col_29": "Phone Number",
                "col_27": "Phone Type",
                "col_66": "Phone Type Description",
                "col_26": "Line Number"
             },
             "rowset":             [
                      {
                   "rowIndex": 0,
                   "MOExist": false,
                   "sPrefix_28":                {
                      "id": 28,
                      "editable": true,
                      "value": "303",
                      "internalValue": "303",
                      "title": "Prefix",
                      "dataType": 2
                   },
                   "sPhoneNumber_29":                {
                      "id": 29,
                      "editable": true,
                      "value": "334-4000",
                      "internalValue": "334-4000",
                      "title": "Phone Number",
                      "dataType": 2
                   },
                   "sPhoneType_27":                {
                      "id": 27,
                      "editable": true,
                      "value": "HOM",
                      "internalValue": "HOM",
                      "title": "Phone Type",
                      "dataType": 2
                   },
                   "sPhoneTypeDescription_66":                {
                      "id": 66,
                      "editable": false,
                      "value": "Home",
                      "internalValue": "Home",
                      "title": "Phone Type Description",
            "dataType": 2
         },
         "mnLineNumber_26":                        {
            "id": 26,
            "editable": false,
            "value": "1",
            "internalValue": 1,
            "title": "Line Number",
            "dataType": 9
         }
      },
                     {
         "rowIndex": 1,
         "MOExist": false,
         "sPrefix_28":                        {
            "id": 28,
            "editable": true,
            "value": "303",
            "internalValue": "303",
            "title": "Prefix",
            "dataType": 2
         },
         "sPhoneNumber_29":                        {
            "id": 29,
            "editable": true,
            "value": "555-1212",
            "internalValue": "555-1212",
            "title": "Phone Number",
            "dataType": 2
         },
         "sPhoneType_27":                        {
            "id": 27,
            "editable": true,
            "value": "CAR",
            "internalValue": "CAR",
            "title": "Phone Type",
            "dataType": 2
         },
         "sPhoneTypeDescription_66":                        {
            "id": 66,
            "editable": false,
            "value": "Car or Mobile",
            "internalValue": "Car or Mobile",
            "title": "Phone Type Description",
            "dataType": 2
         },
         "mnLineNumber_26":                        {
            "id": 26,
            "editable": false,
            "value": "2",
            "internalValue": 2,
            "title": "Line Number",
            "dataType": 9
         }
      },
                     {
         "rowIndex": 2,
         "MOExist": false,
         "sPrefix_28":                        {
            "id": 28,
                "editable": true,
                "value": "720",
                "internalValue": "720",
                "title": "Prefix",
                "dataType": 2
             },
             "sPhoneNumber_29":                   {
                "id": 29,
                "editable": true,
                "value": "331-4014",
                "internalValue": "331-4014",
                "title": "Phone Number",
                "dataType": 2
             },
             "sPhoneType_27":                    {
                "id": 27,
                "editable": true,
                "value": "CAR",
                "internalValue": "CAR",
                "title": "Phone Type",
                "dataType": 2
             },
             "sPhoneTypeDescription_66":                   {
                "id": 66,
                "editable": false,
                "value": "Car or Mobile",
                "internalValue": "Car or Mobile",
                "title": "Phone Type Description",
                "dataType": 2
             },
             "mnLineNumber_26":                   {
                "id": 26,
                "editable": false,
                "value": "3",
                "internalValue": 3,
                "title": "Line Number",
                "dataType": 9
             }
          },
                          {
             "rowIndex": 3,
             "MOExist": false,
             "sPrefix_28":                  {
                "id": 28,
                "editable": true,
                "value": "303",
                "internalValue": "303",
                "title": "Prefix",
                "dataType": 2
             },
             "sPhoneNumber_29":                   {
                "id": 29,
                "editable": true,
                "value": "421-1010",
                "internalValue": "421-1010",
                "title": "Phone Number",
                "dataType": 2
             },
             "sPhoneType_27":                    {
                "id": 27,
                    "editable": true,
                    "value": "HOM",
                    "internalValue": "HOM",
                    "title": "Phone Type",
                    "dataType": 2
                 },
                 "sPhoneTypeDescription_66":                    {
                    "id": 66,
                    "editable": false,
                    "value": "Home",
                    "internalValue": "Home",
                    "title": "Phone Type Description",
                    "dataType": 2
                 },
                 "mnLineNumber_26":                    {
                    "id": 26,
                    "editable": false,
                    "value": "4",
                    "internalValue": 4,
                    "title": "Line Number",
                    "dataType": 9
                 }
              }
           ],
           "summary":             {
              "records": 4,
              "moreRecords": false
           }
        },
        "lblAddressNumber_6":          {
           "id": 6,
           "editable": false,
           "value": "Address Number",
           "title": "Address Number",
           "dataType": 9
        },
        "txtWhosWhoLine_32":          {
           "id": 32,
           "editable": false,
           "value": "0",
           "internalValue": 0,
           "title": "Who&#39;s Who Line",
           "assocDesc": "Ray Allen",
           "dataType": 9
        }
     },
     "errors": [],
     "warnings": []
  },
  "stackId": 1,
  "stateId": 1,
  "rid": "b7ebc0f0832cfbb",
  "currentApp": "P0115_W0115A",
  "sysErrors": []
}
```

Example - Insert Rows - MAF Application Code

This sample code is an example of adding one new phone number using grid actions.

Important: Your mobile application should allow adding records only when the record count is below the maximum. You can determine this by checking the moreRecords field in the grid summary when you fetch existing records. You will not receive an error message if you attempt to add a record beyond the maximum allowed. The record will simply not be added.

```
public void addPhone() {

        AdfmfJavaUtilities.setELValue("#{pageFlowScope.errors}", "false");

        FormRequest formRequest = new FormRequest();


        formRequest.setFormName("P0115_W0115A");
        formRequest.setFormServiceAction("U");

        formRequest.addToFISet("4", addressNumber);
        formRequest.addToFISet("5", "0");

        FSREvent fsrEvent = new FSREvent();
        GridAction gridAction = new GridAction();

        GridRowInsertEvent gri = new GridRowInsertEvent();


        //set the column values
        gri.setGridColumnValue("27", addPhoneType);
        gri.setGridColumnValue("28", addPhonePrefix);
        gri.setGridColumnValue("29", addPhoneNumber);

        //add the row
        gridAction.insertGridRow("1", gri);

        //add the grid action to the events
        fsrEvent.addGridAction(gridAction);

        //press OK button
        fsrEvent.doControlAction("4");

        //add the FSR event to the request
        formRequest.addFSREvent(fsrEvent);


        // Execute SEND and RECEIVE operation
        try {
            // For POST request, set data payload is header delimited with | and service input class

            JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
            String postData = jsonObject.toString();

            String response = JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST,
 JDERestServiceProvider.FORM_SERVICE_URI);
            P0115_W0115A_FormParent tempFormParent =
                ((P0115_W0115A_FormParent)JSONBeanSerializationHelper.fromJSON(P0115_W0115A_FormParent.class,
                                                                                  response));

            if(tempFormParent.getFs_P0115_W0115A().getErrors() != null &&
 tempFormParent.getFs_P0115_W0115A().getErrors().length>0){

                AdfmfJavaUtilities.setELValue("#{pageFlowScope.errors}", "true");
            }else{

            p0115_W0115A_FormParent.getFs_P0115_W0115A().getData().getGridData().setRowsetList
            (tempFormParent.getFs_P0115_W0115A().getData().getGridData().retrieveRowsetList());
            p0115_W0115A_FormParent.getFs_P0115_W0115A().getData().getGridData().setSummary
            (tempFormParent.getFs_P0115_W0115A().getData().getGridData().getSummary());

            AdfmfJavaUtilities.setELValue("#{pageFlowScope.addready}", "true");

        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }


    }
```

Example - Update Rows - JSON

This sample code is an example of updating two phone numbers. You must specify the index of the row you want to update. The row index is included in the information returned when you query the grid. Therefore, you must perform a query before you update a row. In this example, the JSON code updates rows 2 and 4 and sets values in each of the three columns for these rows.

This sample code also includes syntax that shows a column that contains a drop-down selection. The value should be the 'code' value, not the description.

```
"gridColumnEvents": [
  {
        "value": "30",
        "command": "SetGridComboValue",
        "columnID": "43"
   }
]
```

This sample code shows the phones update request:

```
{"token": "044t
+mf8cq2gxqvAlH1SziE9EnBfs5QYNlj3ZQpmFAW9tc=MDE5MDA2ODQ0NjQ4MjI5OTYxODQ5MjQxNlNvYXBVSTEzOTIwNzI3MjAzMTM=",
      "formInputs": [
        {
            "value": "6001",
            "id": "4"
        },
        {
            "value": "0",
            "id": "5"
        }
    ],
    "formActions": [
        {
            "gridAction":
                {
                    "gridID": "1",
                    "gridRowUpdateEvents": [
                        {
                            "rowNumber": 2,
                            "gridColumnEvents": [
                                {
                                    "value": "720",
                                    "command": "SetGridCellValue",
                                    "columnID": "28"
                                },
                                {
                                    "value": "111-1111",
                                    "command": "SetGridCellValue",
                                    "columnID": "29"
                                },
                                {
                                    "value": "CAR",
                                    "command": "SetGridCellValue",
                                    "columnID": "27"
                                }
                            ]
                        },
                        {
                            "rowNumber": 4,
                            "gridColumnEvents": [
                                {
                                    "value": "303",
                                    "command": "SetGridCellValue",
                                    "columnID": "28"
                                },
                                {
                                    "value": "22233333",
                                    "command": "SetGridCellValue",
                                    "columnID": "29"
                                },
                                {
                                    "value": "CAR",
                                    "command": "SetGridCellValue",
                                    "columnID": "27"
                                }
                            ]
                        }
                    ]
                }
        },
        {

            "command": "DoAction",
            "controlID": "4"
        }

    ],
    "deviceName": "RESTclient",
    "formName": "P0115_W0115A"
}
```

Example - Update Rows - JSON Response

```
{
   "fs_P0115_W0115A":    {
      "title": "Phone Numbers",
      "data":        {
         "lblDL01_71":           {
            "id": 71,
            "editable": false,
            "value": "Ray Allen",
            "title": "Ray Allen",
            "dataType": 2
         },
         "lblWhosWhoLine_52":           {
            "id": 52,
            "editable": false,
            "value": "Who's Who Line",
            "title": "Who's Who Line",
            "dataType": 2
         },
         "txtAddressNumber_7":           {
            "id": 7,
            "editable": false,
            "value": "6001",
            "internalValue": 6001,
            "title": "Address Number",
            "assocDesc": "Allen, Ray",
            "staticText": "Address Number",
            "dataType": 9
         },
         "lblDL01_54":           {
            "id": 54,
            "editable": false,
            "value": "Allen, Ray",
            "title": "Allen, Ray",
            "dataType": 2
         },
         "gridData":          {
            "titles":              {
               "col_28": "Prefix",
               "col_29": "Phone Number",
               "col_27": "Phone Type",
               "col_66": "Phone Type Description",
               "col_26": "Line Number"
            },
            "rowset":              [
                                {
                  "rowIndex": 0,
                  "MOExist": false,
                  "sPrefix_28":                {
                     "id": 28,
                     "editable": true,
                     "value": "303",
                     "internalValue": "303",
                     "title": "Prefix",
                     "dataType": 2
                  },
                  "sPhoneNumber_29":                {
                     "id": 29,
                     "editable": true,
                     "value": "334-4000",
                     "internalValue": "334-4000",
                     "title": "Phone Number",
                     "dataType": 2
                  },
                  "sPhoneType_27":                {
                     "id": 27,
                     "editable": true,
                     "value": "HOM",
                     "internalValue": "HOM",
                     "title": "Phone Type",
                     "dataType": 2
                  },
                  "sPhoneTypeDescription_66":                {
                     "id": 66,
                     "editable": false,
                     "value": "Home",
                     "internalValue": "Home",
                     "title": "Phone Type Description",
                     "dataType": 2
                  },
                  "mnLineNumber_26":                {
                     "id": 26,
                     "editable": false,
                     "value": "1",
                     "internalValue": 1,
                     "title": "Line Number",
                     "dataType": 9
                  }
               },
                                {
                  "rowIndex": 1,
                  "MOExist": false,
                  "sPrefix_28":                {
                     "id": 28,
                     "editable": true,
                     "value": "303",
                     "internalValue": "303",
                     "title": "Prefix",
                     "dataType": 2
                  },
                  "sPhoneNumber_29":                         {
                     "id": 29,
                     "editable": true,
                     "value": "555-1212",
                     "internalValue": "555-1212",
                     "title": "Phone Number",
                     "dataType": 2
                  },
                  "sPhoneType_27":                         {
                     "id": 27,
                     "editable": true,
                     "value": "CAR",
                     "internalValue": "CAR",
                     "title": "Phone Type",
                     "dataType": 2
                  },
                  "sPhoneTypeDescription_66":                         {
                     "id": 66,
                     "editable": false,
                     "value": "Car or Mobile",
                     "internalValue": "Car or Mobile",
                     "title": "Phone Type Description",
                     "dataType": 2
                  },
                  "mnLineNumber_26":                         {
                     "id": 26,
                     "editable": false,
                     "value": "2",
                     "internalValue": 2,
                     "title": "Line Number",
                     "dataType": 9
                  }
               },
                              {
                  "rowIndex": 2,
                  "MOExist": false,
                  "sPrefix_28":                         {
                     "id": 28,
                     "editable": true,
                     "value": "720",
                     "internalValue": "720",
                     "title": "Prefix",
                     "dataType": 2
                  },
                  "sPhoneNumber_29":                         {
                     "id": 29,
                     "editable": true,
                     "value": "111-1111",
                     "internalValue": "111-1111",
                     "title": "Phone Number",
                     "dataType": 2
                  },
                  "sPhoneType_27":                         {
                     "id": 27,
                     "editable": true,
                     "value": "CAR",
                     "internalValue": "CAR",
                    "title": "Phone Type",
                    "dataType": 2
                 },
                 "sPhoneTypeDescription_66":                     {
                    "id": 66,
                    "editable": false,
                    "value": "Car or Mobile",
                    "internalValue": "Car or Mobile",
                    "title": "Phone Type Description",
                    "dataType": 2
                 },
                 "mnLineNumber_26":                     {
                    "id": 26,
                    "editable": false,
                    "value": "3",
                    "internalValue": 3,
                    "title": "Line Number",
                    "dataType": 9
                 }
              },
                          {
                 "rowIndex": 3,
                 "MOExist": false,
                 "sPrefix_28":                     {
                    "id": 28,
                    "editable": true,
                    "value": "303",
                    "internalValue": "303",
                    "title": "Prefix",
                    "dataType": 2
                 },
                 "sPhoneNumber_29":                     {
                    "id": 29,
                    "editable": true,
                    "value": "22233333",
                    "internalValue": "22233333",
                    "title": "Phone Number",
                    "dataType": 2
                 },
                 "sPhoneType_27":                     {
                    "id": 27,
                    "editable": true,
                    "value": "CAR",
                    "internalValue": "CAR",
                    "title": "Phone Type",
                    "dataType": 2
                 },
                 "sPhoneTypeDescription_66":                     {
                    "id": 66,
                    "editable": false,
                    "value": "Car or Mobile",
                    "internalValue": "Car or Mobile",
                    "title": "Phone Type Description",
                    "dataType": 2
                 },
                 "mnLineNumber_26":                     {
                    "id": 26,
                    "editable": false,
                    "value": "4",
                    "internalValue": 4,
                    "title": "Line Number",
                    "dataType": 9
                 }
              }
           ],
           "summary":            {
              "records": 4,
              "moreRecords": false
           }
        },
        "lblAddressNumber_6":          {
           "id": 6,
           "editable": false,
           "value": "Address Number",
           "title": "Address Number",
           "dataType": 9
        },
        "txtWhosWhoLine_32":          {
           "id": 32,
           "editable": false,
           "value": "0",
           "internalValue": 0,
           "title": "Who&#39;s Who Line",
           "assocDesc": "Ray Allen",
           "dataType": 9
        }
     },
     "errors": [],
     "warnings": []
  },
  "stackId": 2,
  "stateId": 1,
  "rid": "b7ebc0f0832cfbb",
  "currentApp": "P0115_W0115A",
  "sysErrors": []
}
```

Example - Update Rows - MAF Application Code

This sample code is an example of updating a single phone row from an MAF application.

```
public void updatePhone(int key) {

        AdfmfJavaUtilities.setELValue("#{pageFlowScope.errors}", "false");

        FormRequest formRequest = new FormRequest();


        formRequest.setFormName("P0115_W0115A");
        formRequest.setFormServiceAction("U");

        formRequest.addToFISet("4", addressNumber);
        formRequest.addToFISet("5", "0");

        FSREvent fsrEvent = new FSREvent();
        GridAction gridAction = new GridAction();

        GridRowUpdateEvent gru = new GridRowUpdateEvent();

        //get currently selected row
        P0115_W0115A_GridRow selectedRow = getSelectedPhonebyKey(key);

        //set the column values
        gru.setGridColumnValue("27", selectedRow.getSPhoneType_27().getValue());
        gru.setGridColumnValue("28", selectedRow.getSPrefix_28().getValue());
        gru.setGridColumnValue("29", selectedRow.getSPhoneNumber_29().getValue());


        //update the row based on it's index - zero based
        gridAction.updateGridRow("1",
                                 selectedRow.getRowIndex(),
                                 gru);

        //add the grid action to the events
        fsrEvent.addGridAction(gridAction);

        //press OK button
        fsrEvent.doControlAction("4");

        //add the FSR event to the request
        formRequest.addFSREvent(fsrEvent);


        // Execute SEND and RECEIVE operation
        try {
            // For POST request, set data payload is header delimited with | and service input class

            JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
            String postData = jsonObject.toString();

            String response = JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST, 
JDERestServiceProvider.FORM_SERVICE_URI);
            P0115_W0115A_FormParent tempFormParent =
                ((P0115_W0115A_FormParent)JSONBeanSerializationHelper.fromJSON(P0115_W0115A_FormParent.class,
                                                                                 response));

            if(tempFormParent.getFs_P0115_W0115A().getErrors() != null &&
tempFormParent.getFs_P0115_W0115A().getErrors().length>0){

                AdfmfJavaUtilities.setELValue("#{pageFlowScope.errors}", "true");

            }else{

            p0115_W0115A_FormParent.getFs_P0115_W0115A().getData().getGridData().setRowsetList
            (tempFormParent.getFs_P0115_W0115A().getData().getGridData().retrieveRowsetList());
            p0115_W0115A_FormParent.getFs_P0115_W0115A().getData().getGridData().setSummary
            (tempFormParent.getFs_P0115_W0115A().getData().getGridData().getSummary());

            }

        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }


    }
```

Query Events

You can configure a form service request to send ad hoc queries to EnterpriseOne web client application forms that support the query control.

To add a query, you include a single query object in the form service request. A query object includes parameters that contain the same query criteria that you would use to set up a query in EnterpriseOne. The parameters determine:

- **How the query runs.** You can configure query option parameters to load grid records in the form or clear all other fields in the form before the query runs. You can also specify whether the results of the query should match all (AND) or any (OR) of the conditions specified in the query.

- **The conditions of the query**. The query object includes condition parameters that specify the control ID of the columns or fields that you want to query and an operator for filtering results that are equal to, greater than, or less than a particular value.

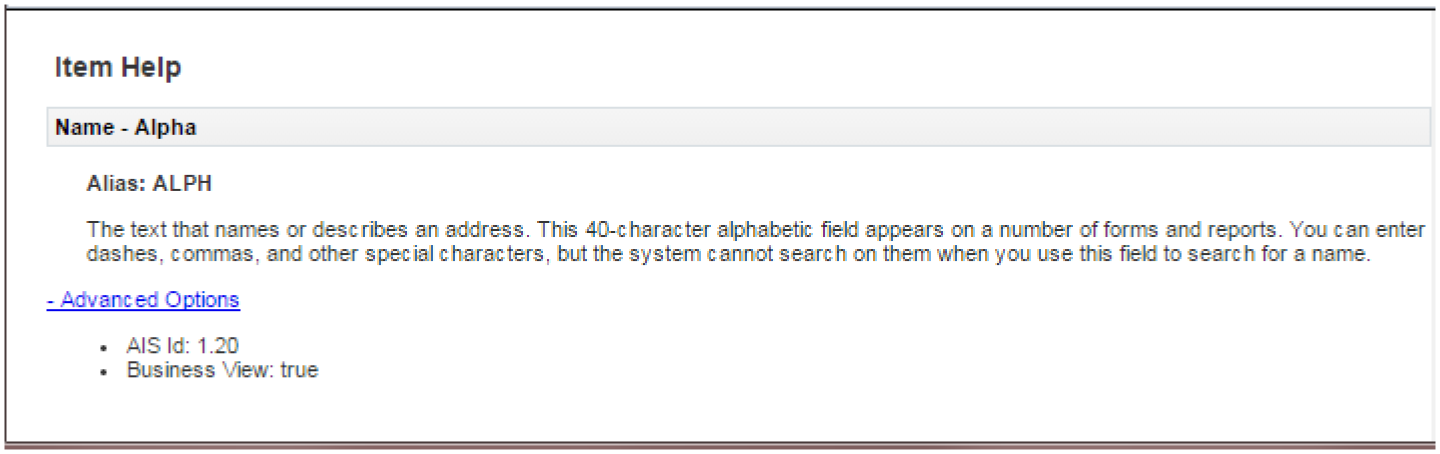
  Note: Queries will work only if the field or columns identified in the query are part of the business view.

- **The value used for the search criteria in the query**. The query object includes value parameters that specify the value or range of values that you want displayed in the query results.

Before you add a query object to a form service request, access the form in the EnterpriseOne web client and use the query control to gather the criteria for the query object parameters. For more information about setting up a query, see *"Understanding the Query Control" in the JD Edwards EnterpriseOne Tools Foundation Guide* .

Also, in the EnterpriseOne form, you need to identify the control ID of the field or column that you want to query, and verify that the field or column is part of the business view. To do so, click the Help button (question mark in the upper right corner of a form) and then click the Item Help option to access field-level help. With the field level help activated, you can click in a field or column to access the control ID and business view information, which is displayed under the Advanced Options section as shown in *Example - Example of Control ID and Business View Information Displayed under Advanced Options in the EnterpriseOne Web Client Item Help*.

Example - Example of Control ID and Business View Information Displayed under Advanced Options in the EnterpriseOne Web Client Item Help


Item Help

Name - Alpha

Alias: ALPH

The text that names or describes an address. This 40-character alphabetic field appears on a number of forms and reports. You can enter dashes, commas, and other special characters, but the system cannot search on them when you use this field to search for a name.

- Advanced Options

- AIS Id: 1.20
- Business View: true

In the Item Help, the syntax of the control ID is 1.20 with 1 representing the grid ID and 20 representing the column ID, which are separated by a dot (.). In the parameter for the query request, the same control ID must be presented with the following syntax: 1[20]. See the *Table 2: Query Condition Parameters* for more information.

Query Object Parameters

The following tables describe the parameters for a query object.

Parameter	Description	Values
autoFind	Directs the query to automatically press Find on the form to populate the grid records. You do not need to include events to press the Find button if you use autoFind.	true, false

Parameter	Description	Values
matchType	Determines if you want the query to search for records that match all (AND) or any (OR) of the specified conditions.	MATCH_ALL, MATCH_ANY
autoClear	Do you want to clear all other fields on the form (for example default filter fields).	true, false

Parameter	Description	Value
controlId	The control ID that the condition applies to. This is the field that you add to the query from the form when using the web client to create a Query. It is either a filter field or a grid column that is associated with the business view.	Example of control IDs: "28", "1[34]"
operator	The comparison operation to use with the query.	For all types, valid values are: BETWEEN, LIST, EQUAL, NOT_ EQUAL, LESS, LESS_EQUAL, GREATER, GREATER_EQUAL For strings, valid values are: STR_START_WITH, STR_END_ WITH, STR_CONTAIN, STR_ BLANK, STR_NOT_BLANK

Parameter	Description	Value
content	This is either a literal value to be used in the comparison operation, or it relates to a special value ID.	Examples of values are: "23", "Joe", "2"
specialValueId	This is a special value, mostly for dates that may be today, or calculated dates from today. For calculated dates, the content field is used in the calculation.	Valid values are: LITERAL, TODAY, TODAY_ PLUS_DAY, TODAY_MINUS_DAY, TODAY_PLUS_MONTH, TODAY_ MINUS_MONTH, TODAY_PLUS_ YEAR, TODAY_MINUS_YEAR

Query Object Examples

This section contains JSON and API code examples of the query object.

Example - Query - JSON

This is an example of JSON code that executes a query on the W42101C form in EnterpriseOne.

```
{
    "token":
 "044mK8eBlupO2jaE4BAvXzaRXsMAM7edfHybw26zSZga1w=MDE5MDA2MjUyMTQ1MDE0Njg1NzMwODE2MFNvYXBVSTE0MTIzNTc1MDkwMTc=",

        "maxPageSize":"20",
"formServiceAction": "R",
      "returnControlIDs": "350|360|41[129,130,116,125,132,123]",
    "query":{
    "condition": [
        {
            "value": [
                {
                    "content": "2",
                    "specialValueId": "LITERAL"
                }
            ],
            "controlId": "41[129]",
            "operator": "EQUAL"
        },
        {
            "value": [
                {
                    "content": "2",
                    "specialValueId": "TODAY_MINUS_YEAR"
                }
            ],
            "controlId": "41[116]",
            "operator": "GREATER"
        },
        {
            "value": [
                {
                    "content": "7000",
                    "specialValueId": "LITERAL"
                },
                {
                    "content": "8000",
                    "specialValueId": "LITERAL"
                }
            ],
            "controlId": "41[125]",
            "operator": "BETWEEN"
        },
        {
            "value": [
                {
                    "content": "00070",
                    "specialValueId": "LITERAL"
                },
                {
                    "content": "00001",
                    "specialValueId": "LITERAL"
                },
                {
                    "content": "00077",
                    "specialValueId": "LITERAL"
                }
            ],
            "controlId": "360",
            "operator": "LIST"
        }
    ],
    "autoFind": true,
    "matchType": "MATCH_ALL",
    "autoClear": false
},

    "deviceName": "RESTclient",
    "formName": "P42101_W42101C"
}
```

Example - Query - Mobile Framework API

This is an example of API code that executes a query on the W42101C form in EnterpriseOne.

```
public void executeQuery() {

        FormRequest formRequest = new FormRequest();

        formRequest.setReturnControlIDs("350|360|41[129,130,116,125,132,123]");
        formRequest.setFormName("P42101_W42101C");
        formRequest.setVersion("ZJDE0001");
        formRequest.setFormServiceAction("R");


        // Execute SEND and RECEIVE operation
        try {

            Query query = new Query();
            query.setAutoFind(true); //automatically presses find button (don't need to
use form action to find)
            query.setMatchType(Query.MATCH_ALL);  //this is an AND operation on all of the
conditions
            query.setAutoClear(false); //clears any existing filter values on the form

            //find all line numbers matching
            NumberCondition numCon = query.addNumberCondition("41[129]",
NumericOperator.EQUAL());
            numCon.setValue(linNo);

            //and requested date within num years from today
            DateCondition dateCon = query.addDateCondition("41[116]",
DateOperator.GREATER());
            dateCon.setSpecialDateValue(DateSpecialValue.TODAY_MINUS_YEAR(), years);

            //and sold to between
            BetweenCondition betCon = query.addBetweenCondition("41[125]");
            betCon.setValues(soldTo1, soltTo2);

            //and company in list
            ListCondition listCon = query.addListCondition("360");
            addValuesToList(listCon);

            //add the query object to the request
            formRequest.setQuery(query);

            formRequest.setMaxPageSize("20");
            // For POST request, set data payload is header delimited with | and service
input class

            JSONObject jsonObject = (JSONObject)
JSONBeanSerializationHelper.toJSON(formRequest);
            String postData = jsonObject.toString();

            //Call to JDERestServiceProvider with parameters json string, method (POST),
URI (formservice)
            String response = JDERestServiceProvider.jdeRestServiceCall(postData,
JDERestServiceProvider.POST, JDERestServiceProvider.FORM_SERVICE_URI);

          p41010_W42101C_FormParent=
               (P42101_W42101C_FormParent)
JSONBeanSerializationHelper.fromJSON(P42101_W42101C_FormParent.class,

response);
```

```
        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }
    }
```

Understanding Batch Form Service

If you make several sequential calls to forms without any data dependencies between them, consider using the Batch Form Service. The Batch Form Service will improve your mobile application's performance.

Batch Form Service - JSON Input and Output

The Batch Form Service requires JSON input and output.

The request URL is: **`POST http://aisserver:port/jderest/batchformservice`**

You can use this URL in a REST testing tool. In the preceding URL, **`batchformservice`** represents the URI, which you define when you perform the jdeRestServiceCall from the API.

The following examples show JSON input and JSON output in a Batch Form Service.

Example - JSON Input in a Batch Form Service

The JSON consists of an array of form requests along with other single form request fields such as token, environment, role, and so forth. You may send as many requests as desired to the same or different form. Each request is executed individually by the EnterpriseOne HTML (JAS) Server and all responses are compiled into a single response.

This example shows a request for two form executions: W54GS220A and W54HS230A. Each have different form interconnect sets, control sets, and so forth. They are completely independent requests.

```
{
     "formRequests": [
        {
            "formInputs": [
                {
                    "value": "09/17/2013",
                    "id": "3"
                },
                {
                    "value": "1",
                    "id": "4"
                }
            ],
            "returnControlIDs": "1[19,20,21,27,28,92,174,177,178]|324",
            "findOnEntry": "TRUE",
            "formName": "P54HS220_W54HS220A"
        },
        {
            "formInputs": [
                {
                    "value": "09/17/2013",
                    "id": "2"
                },
                {
                    "value": "1",
                    "id": "3"
                }
            ],
            "returnControlIDs": "1[35,36,37,44,102,105,200,201,277]|368",
            "findOnEntry": "TRUE",
            "formName": "P54HS230_W54HS230A"
        }],
    "token": "jkfdjfkd"

}
```

Example - JSON Output in a Batch Form Service

The JSON output contains one form element for each form that is called. The forms are numbered in the order they were requested. This is not an array of elements; they are individually defined.

The following sample code is an example of JSON output. For fs_0_P54HS220_W54HS220A, the 0 indicates it was the first form requested. For fs_1_P54HS230_W54HS230A, the 1 indicates it was the second form requested.

```
{
   "fs_0_P54HS220_W54HS220A":    {
      "title": "One View Incident Summary Inquiry",
      "data":       {
         "txtAlertDescription":         {
            "id": 324,
            "value": "Recent Incidents",
            "internalValue": "Recent Incidents",
            "title": "Alert Description",
            "dataType": 2
         },
         "gridData":          {
            "titles":             {
               "col_19": "Incident Number",
               "col_20": "Incident Description",
               "col_21": "Incident Date",
               "col_27": "Incident Status",
               "col_28": "Incident Severity",
               "col_92": "Incident Handler Address",
               "col_174": "Incident Handler Name",
               "col_177": "Incident Status Description",
               "col_178": "Incident Severity Description"
            },
            "rowset":             [
                           {
                  "mnIncidentNumber":                          {
                     "id": 19,
                     "value": "113",
                     "internalValue": 113,
                     "title": "Incident Number",
                     "dataType": 9
                  },
                  "sIncidentDescription":                        {
                     "id": 20,
                     "value": "Gallon drums exposed to sea water rusted and leaked motor
 oil and coolant",
                    "internalValue": "Gallon drums exposed to sea water rusted and leaked
 motor oil and coolant",
                    "title": "Incident Description",
                    "dataType": 2
                 },
                 "dtIncidentDate":                   {
                    "id": 21,
                    "value": "09/17/2013",
                    "internalValue": 1379397600000,
                    "title": "Incident Date",
                    "dataType": 11
                 },
                 "sIncidentStatus":                  {
                    "id": 27,
                    "value": "01",
                    "internalValue": "01",
                    "title": "Incident Status",
                    "dataType": 2
                 },
                 "sIncidentSeverity":                 {
                    "id": 28,
                    "value": "03",
                    "internalValue": "03",
                    "title": "Incident Severity",
                    "dataType": 2
                 },
                 "mnIncidentHandlerAddress":                 {
                    "id": 92,
                    "value": "6001",
                    "internalValue": 6001,
                    "title": "Incident Handler Address",
                    "dataType": 9
                 },
                 "sIncidentHandlerName":                {
                    "id": 174,
                    "value": "Allen, Ray                              ",
                    "internalValue": "Allen, Ray                              ",
                    "title": "Incident Handler Name",
                    "dataType": 2
                 },
                 "sIncidentStatusDescription":                {
                    "id": 177,
                    "value": "Active",
                    "internalValue": "Active",
                    "title": "Incident Status Description",
                    "dataType": 2
                 },
                 "sIncidentSeverityDescription":                {
                    "id": 178,
                    "value": "Medium",
                    "internalValue": "Medium",
                    "title": "Incident Severity Description",
                    "dataType": 2
                 }
              },
                          {
                 "mnIncidentNumber":                   {
                    "id": 19,
                    "value": "117",
                    "internalValue": 117,
            "title": "Incident Number",
            "dataType": 9
         },
         "sIncidentDescription":                    {
            "id": 20,
            "value": " ",
            "internalValue": " ",
            "title": "Incident Description",
            "dataType": 2
         },
         "dtIncidentDate":                    {
            "id": 21,
            "value": "10/01/2013",
            "internalValue": 1380607200000,
            "title": "Incident Date",
            "dataType": 11
         },
         "sIncidentStatus":                    {
            "id": 27,
            "value": " ",
            "internalValue": " ",
            "title": "Incident Status",
            "dataType": 2
         },
         "sIncidentSeverity":                    {
            "id": 28,
            "value": " ",
            "internalValue": " ",
            "title": "Incident Severity",
            "dataType": 2
         },
         "mnIncidentHandlerAddress":                    {
            "id": 92,
            "value": "0",
            "internalValue": 0,
            "title": "Incident Handler Address",
            "dataType": 9
         },
         "sIncidentHandlerName":                    {
            "id": 174,
            "value": "",
            "internalValue": "null",
            "title": "Incident Handler Name",
            "dataType": 2
         },
         "sIncidentStatusDescription":                    {
            "id": 177,
            "value": "Default",
            "internalValue": "Default",
            "title": "Incident Status Description",
            "dataType": 2
         },
         "sIncidentSeverityDescription":                    {
            "id": 178,
            "value": "Default",
            "internalValue": "Default",
            "title": "Incident Severity Description",
            "dataType": 2
         }
      }
```

```
            ],
            "summary":             {
               "records": 2,
               "moreRecords": false
            }
         }
      },
      "errors": [],
      "warnings": []
   },
   "fs_1_P54HS230_W54HS230A":    {
      "title": "One View Incident People Inquiry",
      "data":      {
         "txtAlertDescription":          {
            "id": 368,
            "value": "Recent Reportable Incidents",
            "internalValue": "Recent Reportable Incidents",
            "title": "Alert Description",
            "dataType": 2
         },
         "gridData":          {
            "titles":             {
               "col_35": "Incident Number",
               "col_36": "Incident Description",
               "col_37": "Incident Date",
               "col_44": "Incident Status",
               "col_102": "Incident Handler Address",
               "col_105": "Incident Severity",
               "col_200": "Incident Status Description",
               "col_201": "Incident Severity Description"
            },
            "rowset": [],
            "summary":             {
               "records": 0,
               "moreRecords": false
            }
         }
      },
      "errors": [],
      "warnings": []
   }
}
```

Implementing the Batch Form Service

This section describes how to implement the Batch Form Service in your mobile application.

Batch Request Parent Class

To consume the JSON response, the mobile application must have a class that matches the response. You must manually code this class because you have to provide the forms in the order in which they are being called.

Example - Batch Request Parent Class

The following sample code is an example of what the new class looks like with one member defined, with the form level type for each of the forms called. Notice that the names of the class members match the names returned by the JSON response. This is the most important aspect of the class, to enable the deserialization from JSON to this object.

The form objects, which are P54HS220_W54HS220A and P54HS230_W54HS230A in the following sample code, are the same ones generated by the AIS Client Class Generator and are used for a single form request.

```
package com.oracle.e1.formservicetypes

public class BatchRequestParent {

    private P54HS220_W54HS220A fs_0_P54HS220_W54HS220A;
    private P54HS230_W54HS230A fs_1_P54HS230_W54HS230A;

    public BatchRequestParent() {
        super();
    }

   //getters and setters for everything

}
```

Performing a Batch Form Request

In the data control class, create a method for performing the batch form request. An example of a method named batchFormRequest() follows the steps below.

To create this method:

1. Create a BatchFormRequest object.
2. Add each form request to the list of requests. Each form request is an object called SingleFormRequest.
3. Populate these requests in the same manner that you would use for a single form request.
4. Call the service with uri JDERestServiceProvider.BATCH_FORM_SERVICE_URI and marshal the JSON response to an instance of BatchRequestParent class.

Example - Batch Form Request

You can use each member of the BatchRequestParent class the same way you would use the response from a single form request. In the following sample code, each form in the batch is saved to a member variable of the main data control class.

```
public void batchFormRequest() {

        BatchFormRequest batchFormRequest = new BatchFormRequest();
        //Date used for all
        // Format Incident Date to send to E1
        SimpleDateFormat dateFormat = new SimpleDateFormat("MM/dd/yyyy");
        String sDate = dateFormat.format(getSearchDate());


        //recentIncidents
        SingleFormRequest formRequest = new SingleFormRequest();
        formRequest.setFindOnEntry("TRUE");
        formRequest.setReturnControlIDs("1[19,20,21,27,28,92,174,177,178]|324");
        formRequest.setFormName("P54HS220_W54HS220A");
        formRequest.addToFISet("3", sDate);
        formRequest.addToFISet("4", "1");
        batchFormRequest.getFormRequests().add(formRequest);


        // recentReportableIncidents
        formRequest = new SingleFormRequest();
        formRequest.setFindOnEntry("TRUE");
        formRequest.setReturnControlIDs("1[35,36,37,44,102,105,200,201,277]|368");
        formRequest.setFormName("P54HS230_W54HS230A");
        formRequest.addToFISet("2", sDate);
        formRequest.addToFISet("3", "1");
        batchFormRequest.getFormRequests().add(formRequest);
        try {
            // For POST request, set data payload is header delimited with | and service input class

            JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(batchFormRequest);

            String postData = jsonObject.toString();

            String response = JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST,
 JDERestServiceProvider.BATCH_FORM_SERVICE_URI);


            BatchRequestParent batchParent =
                    (BatchRequestParent)JSONBeanSerializationHelper.fromJSON(BatchRequestParent.class,
 response);

            if(batchParent != null){

                //recentIncidents
                this.p54hs220_formIncidents = new P54HS220_W54HS220A_FormParent();
                this.p54hs220_formIncidents.setFs_P54HS220_W54HS220A(batchParent.getFs_0_P54HS220_W54HS220A());

                IncidentCount ic = new IncidentCount();

 ic.setCount(p54hs220_formIncidents.getFs_P54HS220_W54HS220A().getData().getGridData().getSummary().getRecords());
                ic.setTitle("Recent");
                ic.setScoreboardNumber("1");
                incidentCounts.add(ic);


                // recentReportableIncidents
                this.p54hs230_formParent = new  P54HS230_W54HS230A_FormParent();
                this.p54hs230_formParent.setFs_P54HS230_W54HS230A(batchParent.getFs_3_P54HS230_W54HS230A());
                ic = new IncidentCount();

 ic.setCount(p54hs230_formParent.getFs_P54HS230_W54HS230A().getData().getGridData().getSummary().getRecords());
                ic.setTitle("Reportable");
                ic.setScoreboardNumber("4");
                incidentCounts.add(ic);


            }


        } catch (Exception e) {
            AdfException adfe = new AdfException("Rest Call Failed" + e.getMessage(), AdfException.ERROR);
            throw adfe;
        }


    }
```

Working with the EnterpriseOne REST Services Interface

You can make REST calls directly to the AIS Server without using APIs from the JDEMobileFramework.jar. To do so, use a REST service testing tool to send JSON text to AIS Server endpoints. Each endpoint provides a particular service that the mobile application can use to interact with EnterpriseOne applications. You can access AIS Server endpoints using this URL format:

http://<server>:<port>/jderest/<URI>

See *EnterpriseOne Rest Services Interface* for an illustration of JSON input and output communication between a mobile device and the AIS Server and between the AIS Server and the EnterpriseOne HTML Server.

See the "AIS Services (Endpoints)" section in the *JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* for a description of the available endpoints on the AIS Server along with the HTTP method used to access them. Unless otherwise stated, the request and response are in the form of JSON strings.

Using a REST Services Client to Interact with AIS

In the text area in the bottom left of the form, enter the JSON string that is the input to the tokenrequest service. Entering an environment and role is optional. Include them only if you want to override the default values.

Example - Acceptable Input for the defaultconfig Service on JSON

The defaultconfig service is the only service that uses an HTTP GET operation. It accepts one parameter for the required capabilities in the client application. If any required capabilities listed in that parameter are missing, the response will indicate the missing capabilities in the "requiredCapabilityMissing" field.

```
{
   "jasHost": "jasserver.domainexample.com",
   "jasPort": "8412",
   "jasProtocol": "http",
   "defaultEnvironment": "DV910",
   "defaultRole": "*ALL",
   "displayEnvironment": true,
   "displayRole": true,
   "displayJasServer": false,
   "defaultJasServer": "http://jasserver.domainexample.com:port",
   "ssoAllowed": true,
   "allowSelfSignedSsl": false,
   "sessionTimeout": "30",
   "timeToLive": "720",
   "aisVersion": "EnterpriseOne 9.1.4.6",
   "capabilityList":    [
            {
         "name": "grid",
         "shortDescription": "Grid Actions",
         "longDescription": "Ability to update, insert and delete grid records.",
         "asOfRelease": "9.1.4.4"
      },
            {
         "name": "editable",
         "shortDescription": "Enabled/Disabled",
         "longDescription": "Ability to indicate if form field or grid cell is editable
 (enabled) or not (disabled).",
         "asOfRelease": "9.1.4.4"
      },
            {
         "name": "log",
         "shortDescription": "Logging",
         "longDescription": "Endpoint exposed for logging to AIS server log from client",
         "asOfRelease": "9.1.4.6"
      },
            {
         "name": "processingOption",
         "shortDescription": "Processing Options",
         "longDescription": "Processing Option Service exposed for fetching PO values from
 E1",
         "asOfRelease": "9.1.4.6"
      },
            {
         "name": "ignoreFDAFindOnEntry",
         "shortDescription": "Ignore FDA Find On Entry",
         "longDescription": "Ability to use the IgnoreFDAFindOnEntry flag",
         "asOfRelease": "9.1.4.6"
      }
   ],
   "requiredCapabilityMissing": false,
   "keepJasSessionOpen": true,
   "jasSessionCookieName": "JSESSIONID"
}
```

Example - Acceptable Input for the tokenrequest Service in JSON

```
{
"username":"jde",
"password":"jde",
"deviceName":"RESTclient",
"environment":"JDV910",
"role":"*ALL"
}
```

Example - Acceptable Input for the tokenrequest Service in JSON Response

```
{
   "username": "jde",
   "environment": "JDV910",
   "role": "*ALL",
   "jasserver": "http://jasserver.domainexample.com:port",
   "userInfo":    {
      "token": "044kbwMICIsL8P4jttMj/VtpnEhrSK17i7fa2q8V
+hVDlc=MDE4MDEwNjA1NTMwODkwMzQ1ODY0MTkyUkVTVGNsaWVudDE0MTI2MDg3MDgzODY=",
      "langPref": "  ",
      "locale": "en",
      "dateFormat": "MDE",
      "dateSeperator": "/",
      "simpleDateFormat": "MM/dd/yyyy",
      "decimalFormat": ".",
      "addressNumber": 2111,
      "alphaName": "Ingram, Paul"
   },
   "userAuthorized": false,
   "version": null,
   "poStringJSON": null,
   "altPoStringJSON": null,
   "aisSessionCookie": "W3XmCk8k6vhb3H-dwxSdBpCGZWAb7kh5D4gzemFoqoFqcoWgwqF_!-1217528743!
1412608708388"
}
```

Form Request Attributes

The following list contains a description of the form request attributes. For an example of a form request, see *Example - Form Request*.

- **maxPageSize**. (optional) If you do not specify a value, then AIS will return a maximum of 100 rows. The maximum number you can enter for this setting is 500.

  Starting with EnterpriseOne Tools 9.2.1, there is no maximum limit for rows returned to the grid. However, a maximum value is required. If you want to retrieve all records, enter `No Max` for this attribute.

  The value in the "DB Fetch Limit in the Web Runtime Interactivity" setting in the Web Runtime Interactivity section of the EnterpriseOne HTML Server configuration file (jas.ini) supersedes the maxPageSize setting. The "DB Fetch Limit in the Web Runtime Interactivity" setting is typically set to a higher value (2000 is the default), but you might have to modify it if your results are not as expected. See *"Configuration Groups" in the JD Edwards EnterpriseOne Tools Server Manager Guide* for more information on how to modify server configuration settings.
- **returnControlIDs**. (optional) Indicates which form and grid fields the service passes back. Grid is always 1 and has an array of fields. Form fields are bar delimited after grid, for example 1[19,20,50,48]|54|55. For power forms, indicate the control ID of the subform and then underscore and the control within the subform, for example 1_20|1_22[23,34].
- **formInputs**. (optional) Collection of ID value pairs that represent the form interconnect input to the form. Associate a string for the FI ID with the value to be passed into that FI.
- **version**. The version of the application, for example ZJDE0001.
- **formName**. (required) Application and form name, for example P01012_W01012B.
- **formServiceAction**. (optional) The CRUD operation the form will perform.
- **token**. (required) The EnterpriseOne token that was returned from the tokenrequest service.
- **environment**. (optional) EnterpriseOne environment that was used to request the token.
- **role**. (optional) The EnterpriseOne role used to request the token.
- **findOnEntry**. (optional) Valid values are TRUE or FALSE. Performs a find automatically when the EnterpriseOne application launches. In the EnterpriseOne application this autofind event occurs after post dialog initialized.
- **ignoreFDAFindOnEntry**. (optional) Valid values are TRUE or FALSE. Applies to applications that have the box checked for "Automatically Find on Entry" in the gird in FDA. Allows the form service caller to control if that flag is used or not.
- **formActions**. (optional) A set of actions to be performed on the form, in the order listed. The actions can include entering a value into a form field, QBE field, selecting a radio button, pressing a button, and selecting a check box value.

Example - Form Request

```
{
    "token":
 "044RnByWbW3FbLzpxWjSg55QzZWguAGnYqUNMlyB30IgyU=MDE5MDA2ODg0MDE5NjYwNzM1ODcyNDA5NlNvYXBVSTEzODc0ODc4OTEzNTc=",
    "maxPageSize": "10",
    "returnControlIDs": "1[19,20]58|62",
    "version": "ZJDE0001",
    "formInputs": [
        {
            "value": "E",
            "id": "2"
        }
    ],
    "formActions": [
        {
            "value": "E",
            "command": "SetQBEValue",
            "controlID": "1[50]"
        },
        {
            "value": "Al*",
            "command": "SetControlValue",
            "controlID": "58"
        },
        {
            "value": "on",
            "command": "SetCheckboxValue",
            "controlID": "62"
        },
        {
            "value": "on",
            "command": "SetCheckboxValue",
            "controlID": "63"
        },
        {
            "command": "DoAction",
            "controlID": "15"
        }    ],
            "role": "*ALL",
        "environment": "JDV910",
    "formsServiceAction":"R",
    "deviceName": "RESTclient",
    "formName": "P01012_W01012B"
}
```

Calling FormService on Local EnterpriseOne HTML (JAS) Server through the AIS Server

You have the option to use this technique if you have FDA changes locally and want to test the JSON output while still accessing the AIS Server. This is the closest approximation of how the mobile application will call the REST services.

Configure your local EnterpriseOne HTML Server to accept requests from the AIS Server. To do so:

1. Locate the jas.ini file on the local EnterpriseOne Windows client (development client) machine:

   `C:\E910_1\system\OC4J\j2ee\home\applications\webclient.ear\webclient\WEB-INF\classes\jas.ini`
2. Add or modify the form service section like this:

   ```
   #specify hosts allowed to call the form service and media object service
   [FORMSERVICE]
   allowedhosts=127.0.0.1|10.123.456.7
   ```

   The two preceding entries are the local host IP address and the IP address of the AIS Server. This enables you to make calls through the AIS Server to your local EnterpriseOne HTML Server. For the AIS Server, you can also use **`allowedhosts=*`** if you do not know the AIS Server IP address or want to allow access for any AIS Server.
3. Restart the EnterpriseOne Windows client.
4. Test the configuration by repeating the preceding steps, but include the following change to the JSON requests:

   For tokenrequest: Indicate the JAS server, which is your local EnterpriseOne HTML Server. Also, Oracle recommends that you always include the environment and role because the defaults stored on the AIS Server may not work with a local instance (such as JDV910 vs DV910).

   ```
   {"username":"JDE",
   "password":"jde",
   "deviceName":"RESTclient",
   "jasserver":"http://dnnlaurentvm1:8888",
   "environment":"DV910",
   "role":"*ALL"
   }
   ```

Understanding Text Media Object Attachments

The AIS Server provides a method to get and update the first text attachment stored for a particular media object data structure key in EnterpriseOne.

The JDEMobileFramework API provides the following two services for managing text media object attachments in mobile applications:

- *gettext Service*
- *updatetext Service*

Note:

- *"User-Generated Data Structures" in the JD Edwards EnterpriseOne Tools Data Structure Design Guide* for more information about the function of media object data structures in EnterpriseOne

gettext Service

The URL for getting text media objects is:

```
http://<ais-server>:<port>/jderest/file/gettext
```

Only the first text media object is returned; it does not handle multiple text attachments. Only plain text is supported. While the original text media object is stored in HTML or RTF format (based on the settings on the EnterpriseOne HTML Server), the tags will be removed and the response will be in plain text with line breaks in Unicode (UTF-8) format.

The following table describes the expected JSON input for the gettext service:

Field	Value Description	Example
token (String)	The token you received when you executed a token request.	"044TqjlQVSNHKvokvhWFKa8MYckPgG..."
moStructure (String)	The Media Object Structure	"ABGT" or "GT0801A"
moKey (Array of Strings)	The key to that media object structure.	["7"] or ["2015","283", "2"]
formName (String)	The form where this media object is used.	"P01012_W01012B"
version (String)	The version of the app where this media object is used.	"ZJDE0001"
deviceName (String)	The device making the call to the service.	"FUSE" or "iPhoneSimulator"

Example - gettext Service Input

```
{
    "token":
 "044TqjlQVSNHKvokvhWFKa8MYckPgGJdrd3CEDkzz2YjLQ=MDE5MDA2Nzg3NjEzOTA2MTY1MzIwMTkyMFNvYXBVSTEzOTk1ODA5MzQ0OTg=",
    "moStructure": "ABGT",
    "moKey": [
        "7"
    ],
    "formName": "P01012_W01012B",
    "version": "ZJDE0001",
    "deviceName": "RESTclient"
}
```

Example - gettext Service Response

```
{
   "text": "9.1.4.6 \\u000aFirst Line \\u000aSecond Line \\u000aThird Line \\u000aFourth
 Line \\u000aFifth line",
   "isRTF": false
}
```

updatetext Service

The URL for updating text media objects is:

`http://<ais-server>:<port>/jderest/file/updatetext`

Only plain text is supported.

The following table describes the expected JSON input for the updatetext service:

Field	Value Description	Example
token (String)	The token you received when you executed a token request.	"044TqjlQVSNHKvokvhWFKa8MYckPgG..."
moStructure (String)	The media object structure.	"ABGT" or "GT0801A"
moKey (Array of Strings)	The key to the media object structure.	["7"] or ["2015","283", "2"]
formName (String)	The form where this media object is used.	"P01012_W01012B"
version (String)	The version of the application where the media object is used.	"ZJDE0001"
deviceName (String)	The device making the call to the service.	"RESTClient" or "iPhoneSimulator"
inputText (String)	The text you are updating for the first text media object.	"Update Text"

Field	Value Description	Example
appendText (Boolean)	A flag to indicate if the text should append to (true) or replace (false) the existing first text attachment.	true or false

Example - Update Text Service Input

```
{
    "token":
 "044X9NgLP5VHqIW0zJcWseFjMtjrnZ35TUFmVV3NW9a9g4=MDE5MDA2NDY5MzQ1NjkzNDM1MjE3NjEyOFNvYXBVSTE0MDE3MTc4MDkzNTk=",
    "moStructure": "ABGT",
    "moKey": [
        "7"
    ],
    "formName": "P09E2011_W09E2011A",
    "version": "ZJDE0001",
    "inputText": "\nFirst Line \nSecond Line \nThird Line \nFourth Line \nFifth line",
    "appendText": false,
    "deviceName": "RESTclient"
}
```

Example - Update Text Service Response

```
{
     "updateTextStatus": "Success"
}
```

JDEMobileFramework API Methods for Managing Text Media Objects

The MediaObjectOperations class in the JDEMobileFramework API provide methods for managing text media objects from mobile applications. The same two methods described in the preceding sections, getText and updateText, are exposed in this API.

MediaObjectOperations Class

The following table describes the methods in the MediaObjectOperations class:

Return	Method	Description
MediaObjectGetTextResponse	getTextMediaObject(MediaObjectGetTextR mediaObgetTextRequest) throws Exception	Takes a MediaObjectGetTextRequest, calls the get text service, replaces unicode returns and line feeds with system line separator and returns a MediaObjectGetTextResponse with the resulting text attachment value.
MediaObjectUpdateTextResponse	updateTextMediaObject(MediaObjectUpda mediaObgetUpdateTextRequest) throws Exception	Takes a MediaObjectUpdateTextRequest, calls the update text service and returns result in MediaObjectUpdateTextResponse.

Example - Get Example

```
public void getText() {
        MediaObjectGetTextRequest moGetText = new MediaObjectGetTextRequest();

        moGetText.setFormName(formName);
        moGetText.setVersion(version);
        moGetText.setMoStructure(moStructure);

        //set mo key
        moGetText.addMoKeyValue(mokey);


        try {

            MediaObjectGetTextResponse response =
 MediaObjectOperations.getTextMediaObject(moGetText);
            this.setFirstText(response.getText());


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e, AdfException.ERROR);
            throw adfe;
        }


    }
```

Example - Append Example

```
public void appendText() {
        MediaObjectUpdateTextRequest moUpdateText = new MediaObjectUpdateTextRequest();

        moUpdateText.setFormName(formName);
        moUpdateText.setVersion(version);
        moUpdateText.setMoStructure(moStructure);

        //set mo key
        moUpdateText.addMoKeyValue(mokey);
        moUpdateText.setAppendText(true);
        moUpdateText.setInputText(this.getFirstText());


        try {

            MediaObjectUpdateTextResponse response =
 MediaObjectOperations.updateTextMediaObject(moUpdateText);


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e, AdfException.ERROR);
            throw adfe;
        }
```

```
    }
```

Example - Update Example

```
public void updateText() {
        MediaObjectUpdateTextRequest moUpdateText = new MediaObjectUpdateTextRequest();
        moUpdateText.setFormName(formName);
        moUpdateText.setVersion(version);
        moUpdateText.setMoStructure(moStructure);

        //set mo key
        moUpdateText.addMoKeyValue(mokey);
        moUpdateText.setAppendText(false);
        moUpdateText.setInputText(this.getFirstText());


        try {

            MediaObjectUpdateTextResponse response =
 MediaObjectOperations.updateTextMediaObject(moUpdateText);


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e, AdfException.ERROR);
            throw adfe;
        }


    }
```

Understanding URL Media Object Attachments

You can use the addURLMediaObject method to include URL media object attachments in a mobile application. A URL media object attachment provides a link to a web page or a file located on a server. In EnterpriseOne, a URL media object displays the target of a URL in the Media Object Viewer.

The addURLMediaObject method uses a media object data structure key to identify the record to which the attachment belongs.

The following is a description of the method and the fields that make up the request and the response of the method:

Method - addURLMediaObject
Description - Adds a media object of the type URL.
Returns - MediaObjectAddUrlResponse
Parameters - MediaObjectAddUrlRequest

MediaObjectAddUrlRequest

Field	Type	Description
moStructure	String	The media object structure ID, for example GT0801, GT48100.

Field	Type	Description
moKey	ArrayList <String>	The set of key values, as strings, that is the key of the media object. The API will handle formatting into a bar delimited set. Use the JDEmfUtilities.convertMillisecondsToYMDString() method to pass dates.
formName	String	The application and form usually associated with this media object structure, for example P01012_W01012B. This is for security purposes. Security for media objects is based on the form being used.
version	String	The version of the application noted in the formName. This is for security purposes. Security for media objects is based on the form being used.
urlText	String	The text of the URL, for example www.oracle.com or http://www.oracle.com

MediaObjectAddUrlResponse

Field	Type	Description
urlText	String	The text of the url, for example www.oracle.com or http://www.oracle.com
saveUrl	String	The url as it was saved in the media object table F00165.
sequence	int	The sequence number for the newly added url type media object.

Example - URL Media Object - JSON Request and Response

The following code is an example of a JSON request:

```
{
    "moStructure": "ABGT",
    "moKey": [
        "4242"
    ],
    "formName": "P01012_W01012B",
    "version": "ZJDE0001",
    "token": "044BPeneep/jkkldafjdkla",
    "urlText": "http://www.oracle.com",
    "deviceName": "RESTclient"
}
```

The following code is an example of a JSON response:

```
{
   "saveURL": "http://www.oracle.com",
   "urlText": "http://www.oracle.com",
   "sequence": 5
}
```

Example - URL Media Object - Mobile Framework API

The following is an example of API code for a URL media object.

```
public void addURL() throws Exception {

        //set request info include URLs so they don't have to be fetched later
        MediaObjectAddUrlRequest mediaObjectAddUrlRequest = new
 MediaObjectAddUrlRequest();

        mediaObjectAddUrlRequest.setFormName("P01012_W01012B");
        mediaObjectAddUrlRequest.setVersion("ZJDE00001");
        mediaObjectAddUrlRequest.setMoStructure("ABGT");
        mediaObjectAddUrlRequest.addMoKeyValue("4242");

        mediaObjectAddUrlRequest.setUrlText("http://www.oracle.com");

        MediaObjectAddUrlResponse mediaObjectAddUrlResponse = new
 MediaObjectAddUrlResponse();
        try {
            //get the list of available files for this media object

            mediaObjectAddUrlResponse =
 MediaObjectOperations.addUrlMediaObject(mediaObjectAddUrlRequest);

        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException("Media Object addURL Failed " + " " + e,
 AdfException.ERROR);
            throw adfe;
        }
    }
```

Understanding the Media Object API for Photo Media Object Attachments

You can incorporate photo attachments into native Oracle MAF mobile applications using the JDEMobileFramework.jar, which is a JDE Mobile Helper. The JDEMobileFramework.jar contains a Media Object API that provides classes and methods that enable access to media objects from EnterpriseOne. It works in conjunction with the AIS Server and the MediaObjectRequest capability of the EnterpriseOne HTML Server.

MediaObjectOperations is an abstract class that contains all of the static methods needed to manage media objects. This section describes the following four main operations:

- *List*
- *Download*
- *Upload*
- *Delete*

List

Method - getMediaObjectList
Description - Returns a list of Media Object details based on the information provided in the request.
Returns - MediaObjectListResponse
Parameters - MediaObjectListRequest

MediaObjectListRequest

Field	Type	Description
moStructure	String	The Media Object structure ID (such as GT0801, GT48100)
moKey	ArrayList <String>	The set of key values, as strings, that is the key of the media object. The API will handle formatting into a bar delimited set. Use the JDEmfUtilities.convertMillisecondsToYMDString() method to pass dates.
formName	String	The application and form usually associated with this media object structure (e.g. P01012_W01012B). This is for security purposes. Security for media objects is based on the form being used.
version	String	The version of the application noted in the formName. This is for security purposes. Security for media objects is based on the form being used.
includeURLs	boolean	When true, the response will include the JAS URL for each file type media object.
includeData	boolean	When true, the response will include the Base64 encoded data for a 40 X 40 size of the image in the data field of the response.
moTypes	ArrayList <String>	Valid types are 1 and 5, which are the two file type media objects. Type 1 file attachments are from a Media Object Queue. Type 5 attachments are files uploaded individually to the EnterpriseOne HTML Server.
extensions	ArrayList	Use this field to further reduce the data set by indicating the extensions of the files you want to be

Field	Type	Description
		included in the response (such as "jpg","gif","png", "pdf").
thumbnailSize	<String> int	Use this in conjunction with the includeData flag. When data is included in the response you can pass an integer value in this field to control the size of the thumbnail returned in the data field. A value of 0 will return the default size of 40x40. The maximum size is 200, any value over 200 will return images 200x200.

MediaObjectListResponse

Field	Type	Description
mediaObjects	MediaObjectListItem [ ]	An array of media object list items.

MediaObjectListItem

Field	Type	Description
downloadUrl	String	When true, the response will include the JAS URL for each file type media object.
file	String	When true, the response will include the Base64 encoded data for any image file in the data field of the response. For text type media objects the text will be include in the data field of the response.
itemName	String	A user given name for the media object item. When viewing media objects on JAS this is the name shown directly under each media object item in the left panel of the MO control.
link	String	
moType	int	Type 1 file attachments are from a Media Object Queue. Type 5 attachments are files uploaded individually to the JAS server.
queue	String	For type 1 file attachments from a Media Object Queue the name of the queue.
sequence	int	The sequence the number of that individual attachment in the set of attachments.
updateDate	String	The date that the media object was last updated.

Field	Type	Description
updateHourOfDay	int	The hour that the media object was last updated.
updateMinuteOfHour	int	The minute that the media object was last updated.
updateSecondOfMinute	int	The second that the media object was last updated.
updateUserID	String	The user that last updated that media object.
hasValidTimestamp	boolean	Indicates if time stamp was valid.
isDefaultImage	boolean	Indicates if image is default image.
isMisc	boolean	<unknown>
isOLE	boolean	Is an OLE attachment.
isShortCut	boolean	<unknown>
isText	boolean	Is a text type attachment.
isUpdated	boolean	<unknown>
isURL	boolean	Is a URL type attachment.
data	String	For an image file this is the Base64 encoded string of the image data for a 40x40 size of the image.
thumbFileLocation	String	The location of the thumbnail (40x40) saved on the device. A file is written for each image that has Base64 data included. Files are only written if data is requested.

Download

Method - downloadMediaObject
Description - Downloads a full sized media object to a file on the device, based on the key information provided in the request.
Returns - MediaObjectDownloadResponse
Parameters - MediaObjectDownloadRequest

MediaObjectDownloadRequest

Field	Type	Description
moStructure	String	The Media Object structure ID, for example GT0801, GT48100.
moKey	ArrayList <String>	The set of key values, as strings, that is the key of the media object. The API will handle formatting into a bar delimited set. Use the JDEmfUtilities.convertMillisecondsToYMDString() method to pass dates.
formName	String	The application and form usually associated with this media object structure, for example P01012_W01012B. This is for security purposes. Security for media objects is based on the form being used.
version	String	The version of the application noted in the formName. This is for security purposes. Security for media objects is based on the form being used.
downloadURL	String	The downloadURL provided in the list response. When this value is already known, provide it so the service will not do the extra work of getting the URL.
fileName	String	This will be the name of the file saved on the device file system. It is easiest (and uniqueness is guaranteed) to pass the file provided in the list response.
sequence	int	The sequence number of this individual file in the set of attachments.
height	int	When a value is passed in this field, the image will be scaled to this size before it is returned. If you provide only height, the width will be scaled to maintain the aspect ratio.
width	int	When a value is passed in this field, the image will be scaled to his size before it is returned. If you provide only width, the height will be scaled to maintain the aspect ratio.

FileAttachment

Field	Type	Description
fileName	String	The name of the file as stored in the database.

Field	Type	Description
fileLocation	String	The location of the file saved to the device file system. This includes the "file://" prefix so it can be directly used in image tags in an amx page.
itemName	String	A string value the user may provide as the name of the attachment (if not supplied the file name will be used.)
sequence	int	The sequence number of this individual attachment.
thumbFileLocation	String	The file location of the thumbnail image (this value is not updated when the download method is called).
downloadUrl	String	The JAS URL of the file attachment (this value is not populated when the download method is called).

Upload

Method - uploadMediaObject
Description - Uploads a single file to the media object database based on key values provided in the request.
Returns - MediaObjectUploadResponse
Parameters - MediaObjectUploadRequest

MediaObjectUploadRequest

Field	Type	Description
moStructure	String	The Media Object structure ID (such as GT0801, GT48100).
moKey	ArrayList <String>	The set of key values, as strings, that is the key of the media object. The API will handle formatting into a bar delimited set. Use the JDEmfUtilities.convertMillisecondsToYMDString() method to pass dates.
formName	String	The application and form usually associated with this media object data structure (such as P01012_W01012B). This is for security purposes. Security for media objects is based on the form being used.
version	String	The version of the application noted in the formName. This is for security purposes. Security for media objects is based on the form being used.

Field	Type	Description
file	FileAttachment	The resulting downloaded file with the name, fileLocation, sequence and itemName fields updated.

FileAttachment

Field	Type	Description
fileName	String	The name of the file as stored in the database. (This value is not required for upload.)
fileLocation	String	The location of the file saved to the device file system. This includes the "file://" prefix so it can be directly used in image tags in an amx page.
itemName	String	A descriptive name. If not passed, the filename will be used. The extension will be added automatically.
sequence	int	The sequence number of this individual attachment (this value is not required for upload).
thumbFileLocation	String	The file location of the thumbnail image (this value is not required for upload).
downloadUrl	String	The JAS URL of the file attachment (this value is not required for upload).

MediaObjectUploadResponse

Field	Type	Description
itemName	String	A user given name for the media object item. When viewing media objects on JAS, this is the name shown directly under each media object item in the left panel of the MO control. The extension will be added automatically. If not passed, the file name is used.
sequence	int	The sequence number of this individual attachment (assigned during the upload).

Delete

Method - deleteMediaObject

Description - Deletes the file in the media object database based on key values provided in the request. Deletes the file on the device file system also.

Returns - MediaObjectDeleteResponse

Parameters - MediaObjectDeleteRequest

MediaObjectDeleteRequest

Field	Type	Description
moStructure	String	The Media Object structure ID (e.g. GT0801, GT48100).
moKey	ArrayList <String>	The set of key values, as strings, that is the key of the media object. The API will handle formatting into a bar delimited set. Use the JDEmfUtilities.convertMillisecondsToYMDString() method to pass dates.
formName	String	The application and form usually associated with this media object structure (e.g. P01012_W01012B). This is for security purposes. Security for media objects is based on the form being used.
version	String	The version of the application noted in the formName. This is for security purposes. Security for media objects is based on the form being used.
sequence	int	The sequence number of this individual file in the set of attachments.
fileLocation	String	The location of the file on the device file system.

MediaObjectDeleteResponse

Field	Type	Description
deleteStatus	String	The value 'Success' will be returned for successful deletes. Any other value is a failure.
error	String	In the case of failure details of the error will be included here.

Understanding the Processing Option Service

The processing option service is an AIS service for handling processing options.

The URI for the service is:

```
http://<AIS Server>:<port>/jderest/poservice
```

The input JSON is:

```
{
 "token":
 "044uZUG2Uk1Vd6hzmAhPfILitA2pVLDVKLOYdh4HR71D7s=MDE5MDA2ODM3NTQ3NzU4MDMwNTg2MzY4MFNvYXBVSTEzOTcwNTYxMTIxMTE=",

  "applicationName":"P01012",
  "version":"ZJDE0001",
  "deviceName":"RESTclient"

}
```

The response JSON is like this:

```
{
   "application": "P01012",
   "version": "ZJDE0001",
   "processingOptions":    {
      "GoToSupplierMaster_5":       {
         "type": 1,
         "value": " "
      },
      "GoToCustomerMaster_6":       {
         "type": 1,
         "value": " "
      },
      "GoToCSMS_8":       {
         "type": 1,
         "value": " "
      },
      "HideTax_4":       {
         "type": 1,
         "value": " "
      },
      "SearchTypeDefault_7":       {
         "type": 2,
         "value": " "
      },
      "cTypeCode_11":       {
         "type": 1,
         "value": "A"
      }

   },
   "errors": ""
}
```

Using the AIS Service for Processing Options in a Mobile Application

You can call the processing option service passing an application and version. You can obtain the version from the mobile application processing options, which specify the version of the EnterpriseOne application the mobile application uses. For more information about the processing options for mobile applications, see the *JD Edwards EnterpriseOne Applications Functionality for Mobile Devices Implementation Guide* .

If you use the processing option service, you must add "processingOption" to the list of required capabilities in the about.properties. If you do not do this, you will receive an error at runtime. See *Understanding AIS Server Capabilities* for more information.

```
ProcessingOptionRequestpoRequest = new ProcessingOptionRequest();
poRequest.setEnvironment(ApplicationGlobals.getInstance.getLoginResponse().getEnvironment());
poRequest.setRole(ApplicationGlobals.getInstance.getLoginResponse().getRole());
poRequest.setJasserver(ApplicationGlobals.getInstance.getLoginResponse().getJasserver());
poRequest.setToken(ApplicationGlobals.getInstance.getLoginResponse().getUserInfo().getToken());
poRequest.setApplicationName("P5648203");
poRequest.setVersion("GNJ001");

 try {

  JSONObject jsonObject = (JSONObject) JSONBeanSerializationHelper.toJSON   (poRequest);
  String postData = jsonObject.toString();

//send in po Request json, POST and poservice
 String response =
                    JDERestServiceProvider.jdeRestServiceCall(postData, poRequest.POST,
 poRequest.PO_SERVICE);

//response can be serialized to ProcessingOptionSet class
ProcessingOptionsSet poSet =
                    (ProcessingOptionsSet) JSONBeanSerializationHelper. fromJSON
 (ProcessingOptionsSet.class, response);

 if (poSet != null) {
  //get the individual option and cast it to a variable of matching type

String attachmentAllowed = (String)poSet.getOptionValue ("szAttachmentAllowed_1"));
}
```

Remember to inspect the "errors" element of the response in case an error was encountered when trying to fetch the processing options you requested.

There are six supported data types. These are based on the data item used in the Processing Option Design Aid for each option.

You can get the type of the option before attempting to cast it, which is the recommended method. Or you can just cast it to the type you expect, because it is unlikely to change. The default is String, so you will always be able to get to a string version of the option value.

Type Code	Type Constant	Java Type	JDE DD Type
1	STRING_TYPE	String	String
2	CHAR_TYPE	String	Character
9	BIG_DECIMAL_TYPE	BIG Decimal	Math Numeric
11	DATE_TYPE	Date	Date
15	INTEGER_TYPE	Integer	Integer

Type Code	Type Constant	Java Type	JDE DD Type
55	CALENDAR_TYPE	Calendar	Utime

Understanding the Application Stack Service

The application stack is a service that enables interactive communication with applications running on the EnterpriseOne web client. By using the application stack service, you can perform form interconnects to receive data from the resulting form. You can perform more complex interactions with applications that have cross-form transaction boundaries, for example where you do not want the header saved until the details are added and so forth. Also, with the application stack, you can implement a record reservation in mobile applications that corresponds to a record reservation in the web application.

The purpose of application stack processing is that it enables you to establish a session for a specific application and maintain that session across calls. So you initiate a session or 'open' it with one service call, then you can have any number of service calls to 'execute' actions against the currently running application. Finally, you 'close' the session with a service call.

To accomplish this stateful model, some additional data is managed for each service call, including stack ID, state ID, and rid. Also, each request to execute actions against the running application must be sent with the formOID to ensure the form you are expecting is indeed the currently running form.

Note: You can execute actions on only one form during a stack request. So if your request performs a form interconnect, you will have to submit a subsequent request to operate on the second form running after the interconnect.

Service Endpoint

The application stack service is exposed by the AIS Server at the endpoint:

```
http://<aishost>:<port>/jderest/appstack
```

Capability

The application stack capability is exposed in the default configuration as "applicationStack." You must add this to your used or required capability lists within your mobile application to use this capability.

Prerequisite

The AIS Server must be configured to "Keep JAS Sessions Open" so that the session can be maintained across service calls.

JSON Example of an Application Stack Request

This section shows an example of JSON code that performs the following actions:

- Accessing the Address Book application to find a record.

  See *Open Application: Request and Response*.
- Taking the row exit to the Phones form.

  See *Execute Actions on Application: Request and Response*.
- Adding a phone number.

  See *Adding a Phone Number*.
- Saving and closing the application stack.

  See *Execute Close Application: Request and Response*.

Open Application: Request and Response

Example - Open Application - Request shows an example of the application stack request. It contains all of the other environment and credential information that is included in a form service request. After this information, it contains a single instance of a form service request called formRequest. You can use this to include any action you want to take on this original form, just like a normal form service request. Most important is the action, which is "open" in this case. This tells the EnterpriseOne web client to keep the form open so that you can interact with it on future requests.

So for this request with the Address Book (P01012), the search type is set to "E to perform a "find" and retrieve the first five records.

Note: The maxPageSize indicated in this originating request will be the max page size for all requests in this stack. If you do not specify a maxPageSize, it uses the form service request default of 100.

Example - Open Application - Request

```
{
    "token": "044J57pHCCB3AzH7/
W6Vetm0+yVG6pnKOPl823587SfY6o=MDE5MDA2MTYxOTE0NTE0NjE2OTEyNTg4OFNvYXBVSTE0MDEyMTA5MDE1MDM=",
    "action": "open",
    "formRequest": {
        "returnControlIDs": "54|1[19,20]",
        "maxPageSize": "5",
        "formName": "P01012_W01012B",
        "version": "ZJDE0001",
        "findOnEntry": "TRUE",
        "formInputs": [
            {
                "value": "E",
                "id": "2"
            }
        ]
    },
    "deviceName": "RESTclient"
}
```

Example - Open Application - Response

```
{
   "fs_P01012_W01012B":    {
      "title": "Work With Addresses",
      "data":       {
  … condensed….
      },
      "errors": [],
      "warnings": []
   },
   "stackId": 1,
   "stateId": 1,
   "rid": "e51b593df7a884ea",
   "currentApp": "P01012_W01012B_ZJDE0001",
   "sysErrors": []
}
```

The response contains the data (including the 5 rows, which are not shown), along with additional information used for all subsequent interactions with the open application.

Execute Actions on Application: Request and Response

Next, the JSON code should contain commands to select one of the records returned and access the row exit to Phones (through a form interconnect). With this service call, make sure to pass in the values for stack ID, state ID and rid from the last call, along with the token. Also, indicate an action of "execute," so it knows you are interacting with an open application.

This execute type request contains an actionRequest which can include returnControlIDs for the form you expect to end on and an array of formActions to execute on the form indicated by formOID.

Example - Execute Actions on Application - Request

```
{
    "token": "044DCcituJDHbxBhPcgOuhCb0Av/
xnNiUFxqPTVD6hDfnU=MDE5MDA2MTc1NjYwMzYwMzk0MTE0OTY5NlNvYXBVSTE0MDEyMTkzOTIxMzA=",
    "stackId": 1,
    "stateId": 1,
    "rid": "e51b593df7a884ea",
    "action": "execute",
    "actionRequest": {
        "returnControlIDs": "32|7|1[28,29,66]",
        "maxPageSize": "4",
        "formOID": "W01012B",
        "formActions": [
            {
                ".type": "com.oracle.e1.jdemf.FormAction",
                "command": "SelectRow",
                "controlID": "1.0"
            },
            {
                ".type": "com.oracle.e1.jdemf.FormAction",
                "command": "DoAction",
                "controlID": "65"
            }
        ]
    },
    "deviceName": "RESTclient"
}
```

Example - Execute Actions on Application - Response

```
{
   "fs_P0115_W0115A":    {
      "title": "Phone Numbers",
      "data":       {

  ….condensed..
            "summary":            {
               "records": 3,
               "moreRecords": false
            }
         }
      },
      "errors": [],
      "warnings": []
   },
   "stackId": 1,
   "stateId": 2,
   "rid": "e51b593df7a884ea",
   "currentApp": "P0115_W0115A_ZJDE0001",
   "sysErrors": []
}
```

Notice that the state ID has increased after each service call. Also notice that the "currentApp" has changed, and the JSON is representing the Phones application.

Adding a Phone Number

Example - Adding a Phone Number - Request shows how to execute an additional action on this stack that adds a phone number. You can do this as many times as you want, incrementing the state ID each time. The action does not include saving the information; it only populates the grid.

Example - Adding a Phone Number - Request

```
{
    "token": "044DCcituJDHbxBhPcgOuhCb0Av/
xnNiUFxqPTVD6hDfnU=MDE5MDA2MTc1NjYwMzYwMzk0MTE0OTY5NlNvYXBVSTE0MDEyMTkzOTIxMzA=",
    "stackId": 1,
    "stateId": 2,
    "rid": "e51b593df7a884ea",
    "action": "execute",
    "actionRequest": {
        "formOID": "W0115A",
        "formActions": [
            {
                "gridAction": {
                    "gridID": "1",
                    "gridRowInsertEvents": [
                        {
                            "gridColumnEvents": [
                                {
                                    "value": "720",
                                    "command": "SetGridCellValue",
                                    "columnID": "28"
                                },
                                {
                                    "value": "12345",
                                    "command": "SetGridCellValue",
                                    "columnID": "29"
                                },
                                {
                                    "value": "CAR",
                                    "command": "SetGridCellValue",
                                    "columnID": "27"
                                }
                            ]
                        }
                    ]
                }
            }
        ]
    },
    "deviceName": "RESTclient",
    "ssoEnabled": true
}
```

Execute Close Application: Request and Response

Lastly, the JSON code should contain commands to press the Save button and close the application stack. This saves all phone records that were added to the grid.

Example - Execute Close Application - Request

```
{
    "token": "044DCcituJDHbxBhPcgOuhCb0Av/
xnNiUFxqPTVD6hDfnU=MDE5MDA2MTc1NjYwMzYwMzk0MTE0OTY5NlNvYXBVSTE0MDEyMTkzOTIxMzA=",
    "stackId": 1,
    "stateId": 3,
    "rid": "e51b593df7a884ea",
    "action": "close",
    "actionRequest": {
        "formOID": "W0115A",
        "formActions": [
            {
                "command": "DoAction",
                "controlID": "4"
            }
        ]
    },
    "deviceName": "RESTclient",
    "ssoEnabled": true
}
```

Example - Execute Close Application - Response

```
{
   "fs_P0115_W0115A":    {
      "title": "Phone Numbers",
      "data":       {
   ….condensed…
            ],
            "summary":             {
               "records": 4,
               "moreRecords": false
            }
         }
      },
      "errors": [],
      "warnings": []
   },
   "stackId": 0,
   "stateId": 0,
   "rid": "",
   "currentApp": "P0115_W0115A_ZJDE0001",
   "sysErrors": []
}
```

When the stack is closed, the stack ID, state ID, and rid are cleared, indicating you can no longer interact with that stack.

Mobile Application Example

The application manages the alternate addresses for the 0 contact of an address number. It lists the first 10 "E" type records in the Address Book, and allows the user to select a record where they can add, update, or delete alternate addresses. Notice that the framework handles all of the stack maintenance for you within the ApplicationStack object. You do not need to manually manage the rid, stack ID, or state ID in your mobile application. The API does that for you.

An ApplicationStack variable is defined in the main DC class. You should define one of these for each stack you want to maintain. For example:

```
ApplicationStack appStackAddress = new ApplicationStack();
```

When the mobile application opens, it retrieves the Address Book records and saves the response in a data control variable for the P01012_W01102B form.

```
  public void getABRecords() {

        // Retrieve a list of customers from the P03013_W03013A form.
        LoginResponse lr = getLoginResponse();

        FormRequest formRequest = new FormRequest();
        formRequest.setReturnControlIDs("1");
        formRequest.setFormName("P01012_W01012B");
        formRequest.setReturnControlIDs("54|1[19,20]");
        formRequest.setFormServiceAction("R");
        formRequest.setMaxPageSize("10");
        FSREvent findFSREvent = new FSREvent();
        String name = lr.getUsername();
        findFSREvent.setFieldValue("54", "E");
        findFSREvent.doControlAction("15"); // Find button
        formRequest.addFSREvent(findFSREvent);


        try {
            //open P01012_W01012B
            String response = appStackAddress.open(formRequest);

            p01012_W01012B_FormParent =

 (P01012_W01012B_FormParent)JSONBeanSerializationHelper.fromJSON(P01012_W01012B_FormParent.class,
                                                                                    response);


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            throw new AdfException(e.getMessage(), AdfException.ERROR);
        }

    }
```

When an Address Book record is selected in the mobile application, the mobile application performs a service call to perform the row exit on the open application. It checks to make sure the interconnect happened, and then performs a second interconnect to Work with Alternate Addresses form. Finally, it checks that it is on the addresses form and then deserializes the response to the data control variable for the addresses form. The Address Book application has a multi-select grid, and taking a row exit when multiple records are selected causes issues; therefore the action is to deselect all, and then select the correct one.

```
public String goToAltAddress() {

        String nav = "";
        ActionRequest getAddressAction = new ActionRequest();
        FSREvent selectEvent = new FSREvent();
        try {
            getAddressAction.setFormOID("W01012B");
            Integer rowIndex =
 (Integer)AdfmfJavaUtilities.evaluateELExpression("#{pageFlowScope.selectedABIndex}");
            if (rowIndex != null) {
                selectEvent.unselectAllGridRows("1");
   //select the row they chose
                selectEvent.selectRow("1", rowIndex.intValue());                //deselect the previous row
 (W01012B has multi select grid and we are only viewing one at a time
                selectEvent.doControlAction("67"); //whos who exit
                getAddressAction.addFSREvent(selectEvent);
                String response = appStackAddress.executeActions(getAddressAction);
                if (appStackAddress.getLastAppStackResponse().checkSuccess("P0111_W0111A")) {
                    selectWhosWho();
                    if (appStackAddress.getLastAppStackResponse().checkSuccess("P01111_W01111E")) {

                        nav = "to_Addresses";
                    }

                }
            }
        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            throw new AdfException(e.getMessage(), AdfException.ERROR);
        }

public void selectWhosWho() {

        if (appStackAddress.getLastAppStackResponse().checkSuccess("P0111_W0111A")) {

            try {
                //send another request to go to alt address
                ActionRequest selectAction = new ActionRequest();
                FSREvent findEvent = new FSREvent();
                //findAction.setReturnControlIDs("32|7|1[28,29,66]");
                selectAction.setFormOID("W0111A");
                findEvent.selectRow("1", 0); //first whos who row
                findEvent.doControlAction("148");
                selectAction.addFSREvent(findEvent);
                String response = appStackAddress.executeActions(selectAction);

                if (appStackAddress.getLastAppStackResponse().checkSuccess("P01111_W01111E")) {

                    p01111_W01111E_FormParent =

 (P01111_W01111E_FormParent)JSONBeanSerializationHelper.fromJSON(P01111_W01111E_FormParent.class, response);


                }

            } catch (JDERestServiceException e) {
                JDERestServiceProvider.handleServiceException(e);
            } catch (Exception e) {
                throw new AdfException(e.getMessage(), AdfException.ERROR);
            }
        }


    } new AdfException(e.getMessage(), AdfException.ERROR);
        }

        return nav;
    }
```

The user can then navigate to an individual address to change or delete it. They can also add a new one.

This method handles saving an existing address or adding a new one. It also handles any errors that were returned from the service.

```
public String saveAddress() {
        String nav = "";
        String formMode = (String)AdfmfJavaUtilities.evaluateELExpression("#{pageFlowScope.formMode}");
        ActionRequest addAction = new ActionRequest();
        FSREvent saveEvent = new FSREvent();
        Integer rowIndex = null;

        if (formMode.equals("A") && this.getArrayError().size() > 0) {
            //there was an error on a previously added one, it may be at the form level so we can't easily
 identify the record to fix, close the form and open it again
            cancelAddress();
        }

                //clear errors each time to try again
                setArrayError(new ArrayList());


        try {

            addAction.setFormOID("W01111E");
            GridAction gridAction = new GridAction();

            if (formMode.equals("A")) {
                GridRowInsertEvent gri = new GridRowInsertEvent();
                //set the column values
                gri.setGridColumnValue("34", singleAddressRow.getSAddressType_34().getValue());
                gri.setGridColumnValue("26", singleAddressRow.getSAddressLine1_26().getValue());
                gri.setGridColumnValue("22", singleAddressRow.getSCity_22().getValue());
                gri.setGridColumnValueDate("18", singleAddressRow.getDtBeginDate_18().getDate());

                //add the row
                gridAction.insertGridRow("1", gri);
            } else {
                if (rowIndex == null) {
                    rowIndex =
 (Integer)AdfmfJavaUtilities.evaluateELExpression("#{pageFlowScope.selectedAddressIndex}");
                }
                GridRowUpdateEvent gru = new GridRowUpdateEvent();
                //set the column values
                gru.setGridColumnValue("34", singleAddressRow.getSAddressType_34().getValue());
                gru.setGridColumnValue("26", singleAddressRow.getSAddressLine1_26().getValue());
                gru.setGridColumnValue("22", singleAddressRow.getSCity_22().getValue());
                gru.setGridColumnValueDate("18", singleAddressRow.getDtBeginDate_18().getDate());

                //update the row
                gridAction.updateGridRow("1", rowIndex.intValue(), gru);
            }
            //add the grid action to the events
            saveEvent.addGridAction(gridAction);

            saveEvent.doControlAction("12"); //OK
            //addAction.setReturnControlIDs("32|7|1[28,29,66]");
            addAction.addFSREvent(saveEvent);
            String response = appStackAddress.executeActions(addAction);

            //after save it returns to whos who, open it again to get final list


            if (appStackAddress.getLastAppStackResponse().checkSuccess("P0111_W0111A")) {
                selectWhosWho();
                if (appStackAddress.getLastAppStackResponse().checkSuccess("P01111_W01111E")) {
                    nav = "__back";
                }

            } else {
                if (appStackAddress.getLastAppStackResponse().checkSuccess("P01111_W01111E")) {
                    P01111_W01111E_FormParent tempW0111E =

 (P01111_W01111E_FormParent)JSONBeanSerializationHelper.fromJSON(P01111_W01111E_FormParent.class,
                                                                                 response);
                    //check for errors on the form
                    if (tempW0111E.getFs_P01111_W01111E() != null &&
                        tempW0111E.getFs_P01111_W01111E().getErrors() != null &&
                        tempW0111E.getFs_P01111_W01111E().getErrors().length > 0) {
                        //show error
                        addErrors(tempW0111E.getFs_P01111_W01111E().getErrors());
                    }
                }

            }


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            throw new AdfException(e.getMessage(), AdfException.ERROR);
        }

        return nav;
    }
```

The following sample code shows an example of the method to delete the address. After deleting and saving, the EnterpriseOne form closes, so you have to open it again with the selectWhosWho method.

```
public String deleteAddress(int key) {

        String nav = "";

        ActionRequest deleteActionRequest = new ActionRequest();
        FSREvent deleteEvent = new FSREvent();
        deleteActionRequest.setFormOID("W01111E");
        //deleteActionRequest.setReturnControlIDs("32|7|1[28,29,66]");
        deleteEvent.selectRow("1", key);
        //press Delete button
        deleteEvent.doControlAction("41");
        //press OK button
        deleteEvent.doControlAction("12");
        //add the FSR event to the request
        deleteActionRequest.addFSREvent(deleteEvent);

        try {
            String response = appStackAddress.executeActions(deleteActionRequest);

            if (appStackAddress.getLastAppStackResponse().checkSuccess("P0111_W0111A")) {
                selectWhosWho();
                if
 (appStackAddress.getLastAppStackResponse().checkSuccess("P01111_W01111E")) {

                    nav = "__back";
                } else {
                    //erors on delete?
                }

            } else if
 (appStackAddress.getLastAppStackResponse().checkSuccess("P01012_W01012B")) {

                nav = "to_AB";
            }

        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }

        return nav;
    }
```

After the application finishes working with the set of addresses, the application stack can be closed, as shown in the following example:

```
appStackAddress.close();
```

ApplicationStack Methods

The following table describes the ApplicationStack methods:

Modifier and Type	Method	Description
`String`	`open(FormRequest formRequest)`	Opens a form, allowing further interactions with subsequent service calls.
`String`	`executeActions(ActionRequest actionRequest)`	Executes actions on an already open form.
`String`	`close(ActionRequest actionRequest)`	Closes all applications in the application stack, after executing the actions requested
`String`	`close ()`	Closes all applications in the application stack, without doing any further actions
`void`	`setOverrideDefaultFeature(Stri overrideDefaultFeature)`	Use this to set the default feature if you are using an ApplicationStack from a re-usable component. Similar to how you have to override the default feature for a form service call. Do this call before other requests.
`ApplicationStackResponse`	`getLastAppStackResponse()`	Returns the last response which includes the stack ID, state ID, rid and system errors.

ApplicationStackResponse Methods

The following table describes the ApplicationStackResponse methods:

Modifier and Type	Method	Description
`boolean`	`checkSuccess (String appForm)`	Returns true if the last response was for the appForm (for example P01012_W01012B) if the form does not match it returns false.

Data Service (Release 9.1.5.5)

The AIS Server provides an endpoint called "dataservice" for data query or count requests over tables or business views.

Data service calls are made using the DataRequest object. If you use the data service, you must include the "dataservice" capability in the required or used capabilities list.

Parameter	Description	Values
targetName	The name of the table or view to count or query.	Example values: F0101 or V4210A
targetType	The object type to count or query: table or business view.	DataRequest.TARGET_TABLE DataRequest.TARGET_VIEW
dataServiceType	The type of operation to be performed: count or query (represented by the value BROWSE).	DataRequest.TYPE_COUNT DataRequest.TYPE_BROWSE

Parameter	Description	Values
findOnEntry	This parameter determines if the service performs an automatic find.	FormRequest.TRUE FormRequest.FALSE
returnControlIDs	Columns to be returned in the form of *Table.Column.*	Example values: F0101.AN8|F0101.PA8|F0101.ALPH
maxPageSize	The maximum amount of records to return for a browse operation	
query	A query, using the column names (F0101.AN8) for a complex select operation. The only difference between this and the query described in *Query Events*, is the way the control IDs are passed in.	

Example - Data Service Example

This example requests either a count or records (browse) from the F0150 table, using a query for a specific structure type (ES) and parent (PA8). For a count, it uses the helper to get the count value. For the browse, it de-serializes the response into a generated class (generated for data request).

```
public void executeDataRequest(boolean count) {

        try {

            //created the data request
            DataRequest children = new DataRequest();


            //it is a count type
            if(count){
            children.setDataServiceType(DataRequest.TYPE_COUNT);
            }
            else{
                children.setDataServiceType(DataRequest.TYPE_BROWSE);
                children.setReturnControlIDs("F0150.AN8|F0150.OSTP");
            }

            //over the F0150 table
            children.setTargetName("F0150");
            //indicate table type
            children.setTargetType(DataRequest.TARGET_TABLE);

            //create a query
            Query childrenQ = new Query();
            //set it to do a find
            childrenQ.setAutoFind(true);
            //match all conditions
            childrenQ.setMatchType(Query.MATCH_ALL);

            //first condition is value of ES in the OSTP column
            childrenQ.addStringCondition("F0150.OSTP", StringOperator.EQUAL(), "ES");
            //second condition is value of 7500 in the PA8 column
            childrenQ.addStringCondition("F0150.PA8", StringOperator.EQUAL(), "7500");

            //set the query to the request
            children.setQuery(childrenQ);

            //send the request in, indicatging the data service uri
            String response =
                JDERestServiceProvider.jdeRestServiceCall(children,
 JDERestServiceProvider.POST,

 JDERestServiceProvider.DATA_SERVICE_URI);


            if(count){
            //marchal the response to the CountResponse class
            f0150CountResponse childrenCount =
                (f0150CountResponse)
 JSONBeanSerializationHelper.fromJSON(f0150CountResponse.class, response);

            setCount(childrenCount.getDs_F0150().getCount());
            }
            else{
                setF0150fp(
                    (DATABROWSE_F0150_FormParent)
 JSONBeanSerializationHelper.fromJSON(DATABROWSE_F0150_FormParent.class,

 response));


            }


        } catch (JDERestServiceException e) {
            JDERestServiceProvider.handleServiceException(e);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }
    }
```

Data Service Data Aggregation (API 2.2.1 and EnterpriseOne Tools Release 9.2.0.2)

Data service data aggregation provides the capability to request an aggregation of values in a data service request. To perform aggregation functions over records from tables or business views, you must add both `dataservice` and `dataServiceAggregation` to the used capabilities list before using the aggregation APIs.

The following aggregation information is sent in the DataRequest object attribute:

`aggregation, AggregationInfo object`

An aggregation consists of the following three arrays of objects:

- **aggregations array**.

  An array of columns with their associated aggregation type.
- **groupBy array**.

  An array of columns to group by.
- **orderBy array**.

  An array of columns to order by with the direction.

  You can also order by an aggregation result.
- **having array**.

  An array of aggregations with conditions to reduce the result based on aggregation values.

The following table describes the seven column-specific aggregation types that are available. You can combine more than one type in a single request. Based on the results of a find or query, multiple aggregations can be performed over multiple columns.

Aggregation	Constant
Sum	`AggregationType.AGG_TYPE_SUM()`
Minimum	`AggregationType.AGG_TYPE_MIN()`
Maximum	`AggregationType.AGG_TYPE_MAX()`
Average	`AggregationType.AGG_TYPE_AVG()`
Count Distinct	`AggregationType.AGG_TYPE_COUNT_DISTINCT()`
Average Distinct	`AggregationType.AGG_TYPE_AVG_DISTINCT()`
Sum Distinct	`AggregationType.AGG_TYPE_SUM_DISTINCT()`

In addition, there is an aggregation type for performing a count called Count* that is available through the following API:

```
AggregationInfo_addCount();
```

There are two possible directions to order by:

- Ascending, which uses the following constant:

  ```
  OrderByDirection.ORDER_DIRECT_ASCENDING()
  ```

- Descending, which uses the following constant:

  ```
  OrderByDirection.ORDER_DIRECT_DESCENDING()
  ```

Example - Calling an Aggregation Type Data Request shows how to call an aggregation type data request. In the example, two data requests are sent in a single batch to the AIS Server. The first one is an aggregation of columns in V0101 without a Groupby array. The second is an aggregation request over F060116 with a Groupby array.

At the end of the data request, the AggregationResponseHelper methods are used to get the specific aggregations from the responses. If there is a Groupby array in the response, the helper will return a JDONArray, which you will have to iterate with to get individual aggregate values for each group. Specific AggregationResponseHelper methods are provided for consuming a batch response.

Example - Calling an Aggregation Type Data Request

```
public void dataRequestBatchAggregation()        {


            /*** One ****/
            DataRequest dataAggregation = new DataRequest();
            dataAggregation.setDataServiceType(DataRequest.TYPE_AGGREGATION);
            dataAggregation.setTargetName("V0101");
            dataAggregation.setTargetType(DataRequest.TARGET_VIEW);

            AggregationInfo aggregation = new AggregationInfo();

            aggregation.addAggregationColumn("AN8", AggregationType.AGG_TYPE_SUM());
```

```
            aggregation.addAggregationColumn("AN8", AggregationType.AGG_TYPE_AVG());
            aggregation.addAggregationColumn("AT1",
AggregationType.AGG_TYPE_COUNT_DISTINCT());
            aggregation.addCount();

            dataAggregation.setAggregation(aggregation);

            Query an8Query = new Query();
            an8Query.setAutoFind(true);
            an8Query.setMatchType(Query.MATCH_ALL);


            an8Query.addNumberCondition("F0101.AN8", NumericOperator.LESS(), 6001);
            dataAggregation.setQuery(an8Query);


            /****TWO*****/
            DataRequest dataAggregation2 = new DataRequest();
            dataAggregation2.setFindOnEntry(true);
            dataAggregation2.setDataServiceType(DataRequest.TYPE_AGGREGATION);
            dataAggregation2.setTargetName("F060116");
            dataAggregation2.setTargetType(DataRequest.TARGET_TABLE);

            AggregationInfo aggregation2 = new AggregationInfo();

            aggregation2.addAggregationColumn("SAL", AggregationType.AGG_TYPE_SUM());
            aggregation2.addAggregationColumn("SAL", AggregationType.AGG_TYPE_AVG());
            aggregation2.addAggregationColumn("SAL",
AggregationType.AGG_TYPE_AVG_DISTINCT());
            aggregation2.addAggregationColumn("SAL", AggregationType.AGG_TYPE_MAX());
            aggregation2.addAggregationColumn("SAL", AggregationType.AGG_TYPE_MIN());
            aggregation2.addAggregationColumn("SAL",
AggregationType.AGG_TYPE_SUM_DISTINCT());
            aggregation2.addCount();
            aggregation2.addAggregationColumn("AN8",
AggregationType.AGG_TYPE_COUNT_DISTINCT());

            aggregation2.addAggregationGroupBy("HMCO");
            aggregation2.addAggregationGroupBy("HMCU");

            aggregation2.addAggregationOrderBy("HMCO",
OrderByDirection.ORDER_DIRECT_DESCENDING());

            dataAggregation2.setAggregation(aggregation2);


            BatchDataRequest batchDataRequest = new BatchDataRequest();
            batchDataRequest.getDataRequests().add(dataAggregation);
            batchDataRequest.getDataRequests().add(dataAggregation2);


            String response = JDERestServiceProvider.jdeRestServiceCall(batchDataRequest,
JDERestServiceProvider.POST, JDERestServiceProvider.DATA_SERVICE_URI);


            JSONArray array =
AggregationResponseHelper.getAggregateValuesArrayBatch(response, "F060116", 1);

            setSalaryChartList(new ArrayList<salaryChart>());
            setCountChartList(new ArrayList<CountChart>());
            for (int i = 0; i < array.length(); i++) {

                JSONObject aGroup = array.getJSONObject(i);
                JSONObject groupByInfo = (JSONObject)
 aGroup.get(AggregationResponseHelper.GROUP_BY);
                Double average = (Double) aGroup.get("SAL_AVG");
                Integer count = (Integer) aGroup.get("COUNT");

                salaryChartList.add( new salaryChart( average,
 groupByInfo.get("HMCU").toString().trim()));
                countChartList.add( new CountChart( count,
 groupByInfo.get("HMCU").toString().trim()));

            }

             setAverage(AggregationResponseHelper.getSimpleAggregateValueBatch(response,
 "V0101", 0, AggregationType.AGG_TYPE_AVG(), "AN8"));



        }
```

Example - Having Example

This example shows how to reduce the data set with conditions based on the aggregate values, by using a having clause.

```
public void dataRequestHaving()

        DataRequest dataAggregation2 = new DataRequest();
        dataAggregation2.setFindOnEntry(true);
        dataAggregation2.setDataServiceType(DataRequest.TYPE_AGGREGATION);
        dataAggregation2.setTargetName("F060116");
        dataAggregation2.setTargetType(DataRequest.TARGET_TABLE);

        //create aggregation info object and add desired aggregations
        AggregationInfo aggregation2 = new AggregationInfo();

        aggregation2.addAggregationColumn("SAL", AggregationType.AGG_TYPE_AVG());
        aggregation2.addCount();

        //add desired group by columns
        aggregation2.addAggregationGroupBy("HMCU");

        //add order by average sal dec and hmcu dec with direction
        aggregation2.addAggregationOrderBy("SAL", AggregationType.AGG_TYPE_AVG(),
                                   OrderByDirection.ORDER_DIRECT_DESCENDING());

       aggregation2.addAggregationOrderBy("HMCU",
 OrderByDirection.ORDER_DIRECT_DESCENDING());

        //add having average salary greater than 50,000
        Having having = new Having();
        having.addNumberCondition("SAL", AggregationType.AGG_TYPE_AVG(),
 NumericOperator.GREATER(), 50000);
        dataAggregation2.setHaving(having);

        //set the aggregation info in the request
        dataAggregation2.setAggregation(aggregation2);
        String response =
            JDERestServiceProvider.jdeRestServiceCall(dataAggregation2,
 JDERestServiceProvider.POST,

 JDERestServiceProvider.DATA_SERVICE_URI);


  //use helper to get array of values (add them to a list)
            JSONArray array = AggregationResponseHelper.getAggregateValuesArray(response,
 "F060116");
        setSalaryChartList(new ArrayList<salaryChart>());
        setCountChartList(new ArrayList<CountChart>());
        for (int i = 0; i < array.length(); i++) {

            JSONObject aGroup = array.getJSONObject(i);
            JSONObject groupByInfo = (JSONObject)
 aGroup.get(AggregationResponseHelper.GROUP_BY);
            Double average = (Double) aGroup.get("SAL_AVG");
            Integer count = (Integer) aGroup.get("COUNT");

            salaryChartList.add( new salaryChart( average,
 groupByInfo.get("HMCU").toString().trim()));
            countChartList.add( new CountChart( count,
 groupByInfo.get("HMCU").toString().trim()));

        }


    }
```

Understanding the Preferences Service (API 2.2.1 and EnterpriseOne Tools Release 9.2.0.2)

The preferences service enables the caller to save and retrieve EnterpriseOne user-level information that is stored by user, role, or *PUBLIC in the User Overrides Table (F98950) in EnterpriseOne.

The keys to the information are the Type (UOTY), User ID (USER), Sequence (SEQ) and Object Name (OBNM). The data is a string and is stored in the blob column BINDTA. All preference records are written with Type=PS.

The JDEMobileFramework API enables you to save a serialized HashMap of data to this table using the methods in the PreferencesService object. For the get operation, the data is de-serialized to a HashMap and returned.

It is important to note that the system stores the data as serialized values. For example, a Date object will be stored as a formatted string, which you must convert back to a date after the response is returned.

If a mobile application has multiple sets of data that need to be saved separately, a sequence field is available as a key. The default sequence value is zero if you do not specify a sequence.

Set and put actions are performed on behalf of the logged in user, with user records stored in the USER column. You can use the User Overrides application (P98950) in EnterpriseOne to manage the records. In P98950, you can copy records to different roles including *PUBLIC. The record will be retrieved from P98950 based on the user, role, or *PUBLIC hierarchy.

Preference Service Endpoint

The preference service is exposed by the AIS Server at the endpoint:

```
http://<aishost>:<port>/jderest/preference
```

Capability

The preference service capability is exposed in the default configuration as "preferenceService." You must add this to your used or required capability list within your mobile application to use this capability.

JSON Example of a Preference Service Request

The preferenceData element can contain any string. In the examples in this section, the strings are serialized HashMap objects storing name-value pairs for several different preference values.

Get Preferences: Request and Response

Example - Get Preferences - Request and *Example - Get Preferences - Response* show the JSON representation of the Get Preferences request and response.

Example - Get Preferences - Request

```
{
    "token":
 "0440rV4RxUjDA4wDISJAvbhHtIXvju74FHMak7lM64gdsU=MDE5MDEwMTIzNDI0ODcwNTc1Mjg5MTEyNFJFU1RjbGllbnQxNDQ1ODg5ODY0MTYw",
    "action": "GET",
    "objectName": "M55100",
    "sequence": 0,
    "preferenceData": "{\"pref2\":15.45,\"pref1\":\"Preference 1 String\",\"pref3\":8,\"pref4\":1443645908933}",
    "deviceName": "RESTclient"
}
```

Example - Get Preferences - Response

```
{
   "objectName": "M55100",
   "type": "PS",
   "preferenceData": "{\"pref2\":15.45,\"pref1\":\"Preference 1 String\",\"pref3\":8,
\"pref4\":1443645908933}",
   "sequence": 0
}
```

Put Preferences: Request and Response

Example - Put Preferences - Request and *Example - Put Preferences - Response* provide an example of the JSON representation of the Put Preferences request and response.

Example - Put Preferences - Request

```
{
   "token":
 "0440rV4RxUjDA4wDISJAvbhHtIXvju74FHMak7lM64gdsU=MDE5MDEwMTIzNDI0ODcwNTc1Mjg5MTEyNFJFU1RjbGllbnQxNDQ1ODg5ODY0MTYw",
    "action": "PUT",
    "objectName": "M55100",
    "preferenceData": "{\"pref2\":15.45,\"pref1\":\"Preference 1 String\",\"pref3\":8,\"pref4\":1443645908933}",
    "deviceName": "RESTclient"
}
```

Example - Put Preferences - Response

```
{
   "objectName": "M55100",
   "type": "PS",
   "preferenceData": "{\"pref2\":15.45,\"pref1\":\"Preference 1 String\",\"pref3\":8,
\"pref4\":1443645908933}"
}
```

Examples of APIs Used to Enable Preferences in a Mobile Application

A mobile application can manage storage of preferences as needed by using the APIs. Also, remember that the "preferenceService" capability must be added to the used or required capability list in the mobile application's about.properties to support this functionality.

Example - Preference Variables, HashMap, and Preference Key

This example shows several variables designed to hold preference values along with a HashMap for serializing and saving the values. The key to these preferences is the mobile application ID, which is M55100, as shown here:

```
private String pref1Str;
 private Integer pref2Int;
 private BigDecimal pref3BigD;
 private Date pref4Date;

 private HashMap<String, Object> preferenceMap = new HashMap<String, Object>();

 private static final String PREF_KEY = "M55100";
```

Example - Get Preferences API

A method is defined to retrieve preferences, calling the API with the key. When the method is called, the values will be populated based on the data saved.

```
public void retrievePreferences() {

        try {
            PreferenceService prefService = new PreferenceService();
            this.setPreferenceMap(prefService.getPreferences(PREF_KEY));


        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }
    }
```

Example - Get Preferences API

A method is defined to save preferences, calling the API with the key. When the method is called, the values in the variables will be saved in the database for that user.

```
    public void putPreferences() {
        try {
            PreferenceService prefService = new PreferenceService();

            prefService.setPreferences(PREF_KEY, this.getPreferenceMap());

        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }
    }
```

In the setter for the hash map, the individual variables are updated with values from the map.

```
public void setPreferenceMap(HashMap<String, Object> preferenceMap) {
        this.preferenceMap = preferenceMap;
        this.pref1Str = (String) preferenceMap.get("pref1Str");
        this.pref2Int = (Integer) preferenceMap.get("pref2Int");

        //Big decimal serialized using Double, use Double to de-serialize
        this.pref3BigD = new BigDecimal((Double) preferenceMap.get("pref3BigD"));

        //dates are serialized using this format, use the same to de-serialize
        SimpleDateFormat sdf = new SimpleDateFormat("yyyy-MM-dd'T'HH:mm:ss.SSSXXX");
        String dateString = (String) preferenceMap.get("pref4Date");

        try {

            this.pref4Date = sdf.parse(dateString);
        } catch (Exception e) {
            AdfException adfe = new AdfException(e.getMessage(), AdfException.ERROR);
            throw adfe;
        }
    }
```

In the getter for the hash map, the individual variables are set in the map and returned.

```
    public HashMap<String, Object> getPreferenceMap() {

        this.preferenceMap = new HashMap<String, Object>();
        preferenceMap.put("pref1Str", this.pref1Str);
        preferenceMap.put("pref2Int", this.pref2Int);
        preferenceMap.put("pref3BigD", this.pref3BigD);
        preferenceMap.put("pref4Date", this.pref4Date);
        return preferenceMap;
    }
```

6 Appendix A - Creating a Sample Mobile Application

Creating a Sample Mobile Application

This appendix guides you through the steps to create a sample EnterpriseOne mobile enterprise application using Oracle Mobile Application Framework (MAF).

Before You Begin

Before following the instructions in this section, see *Prerequisites* in this guide to ensure you have completed the required prerequisites.

The prerequisites include the JDEMobileSampleApplication.zip. This zip file contains the components for running the same sample mobile application that this appendix describes how to create. You can use this sample for comparison purposes. To run this sample application, you must configure it with the JDEMobileFramework.jar and Login.jar as described in *Including the JDEMobileFramework.jar* and *Including the Login.jar*.

Remember, the files in the JDEMobileSampleApplication.zip are intended for reference purposes only.

Note: To run the sample mobile application, you must make sure that the JDEMobileSampleApplication and the Oracle MAF extension are from the same JDE_Mobile_Framework package. For example, if you installed the 2.0.1 MAF extension from the JDE_Mobile_Framework_2.0.1 package, then you will need to run the JDEMobileSampleApplication that is included in that package. To verify the version of the Oracle MAF extension:

1. In JDeveloper click the Help menu, About, and then click the Extensions tab.
2. In the "find" field, type `maf` and then press Enter. Scroll to the right to check the version.

Creating the Sample Address Book Mobile Application

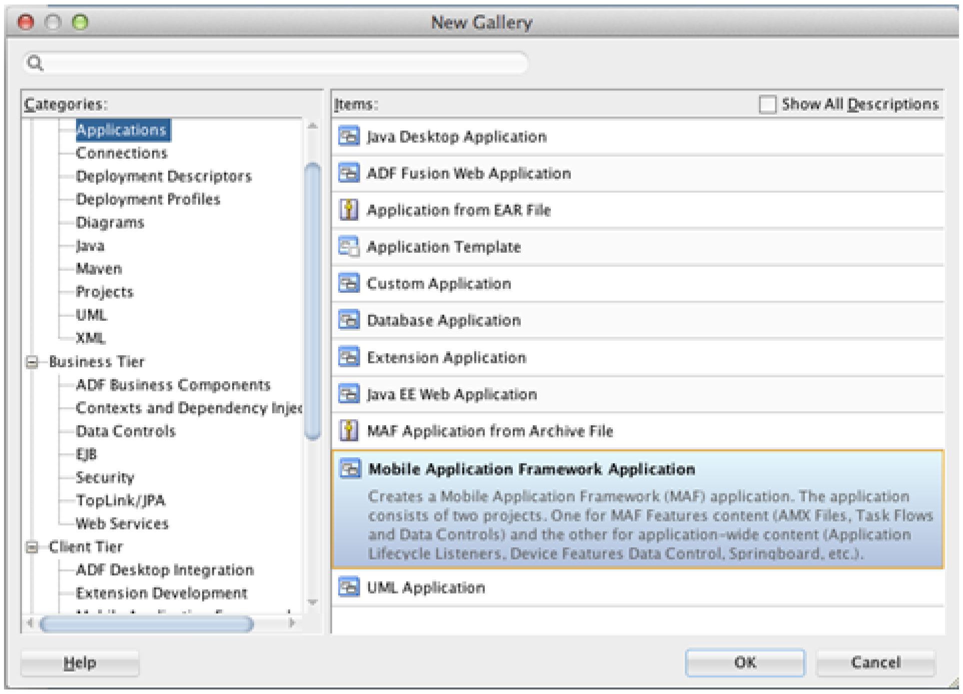
This section contains the following topics:

- *Creating a New Mobile MAF Application*
- *Running the Mobile Application in the Simulator*

Creating a New Mobile MAF Application

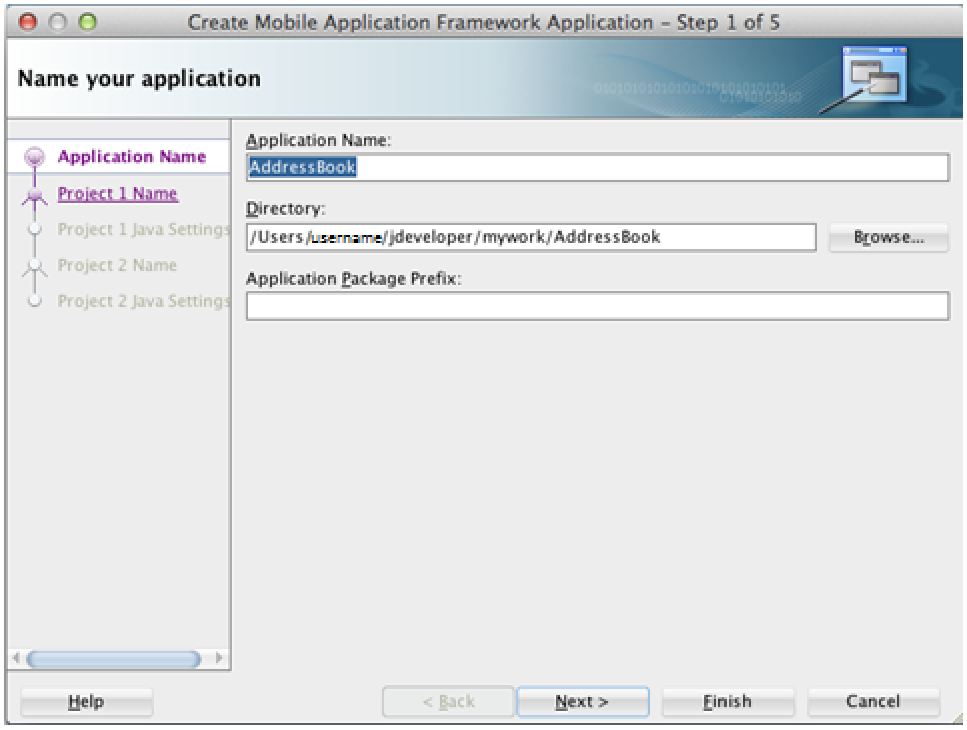
This section describes how to create a new sample mobile application entitled Address Book.

1. Launch JDeveloper.
2. Select the **File** menu **> New > Application**.



Creates a Mobile Application Framework (MAF) application. The application consists of two projects. One for MAF Features content (AMX Files, Task Flows and Data Controls) and the other for application-wide content (Application Lifecycle Listeners, Device Features Data Control, Springboard, etc.).

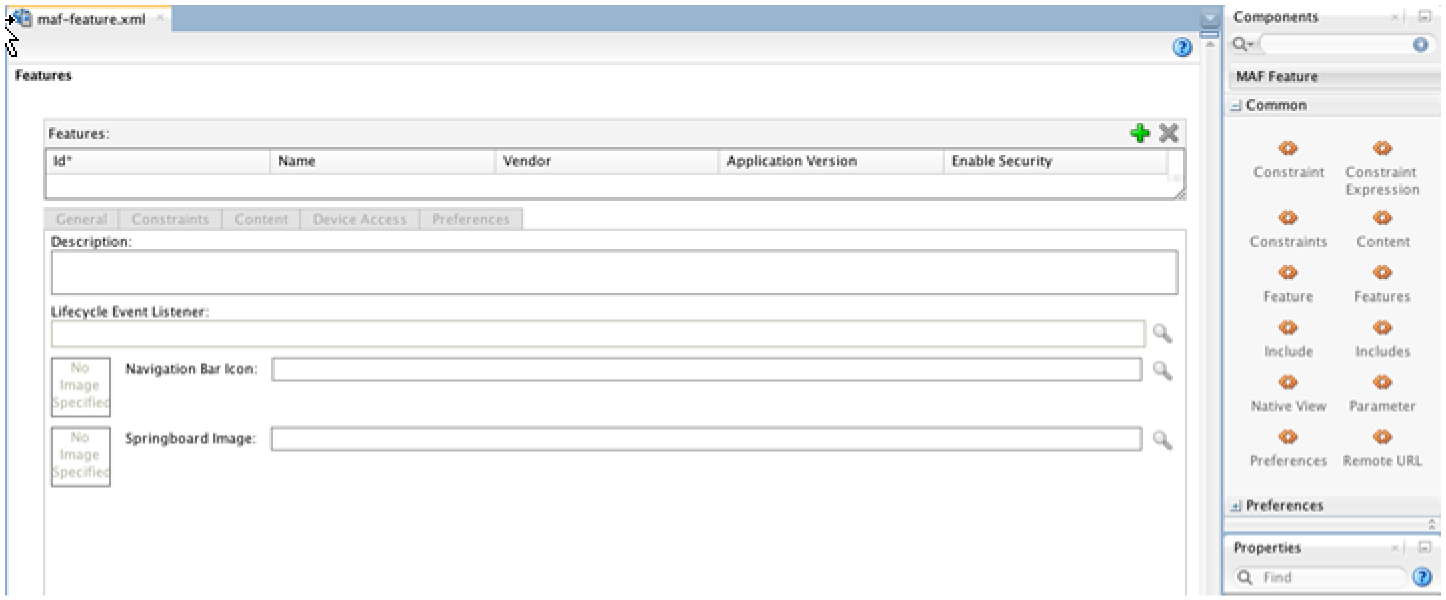
3. In the New Gallery, select **Mobile Application Framework Application** and click **OK**.



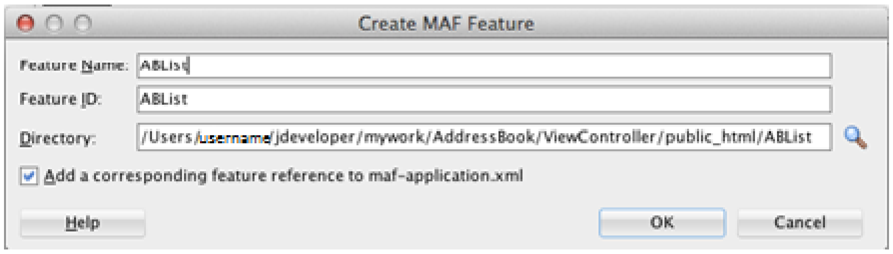
Application Name: AddressBook
Directory: /Users/username/jdeveloper/mywork/AddressBook
Application Package Prefix:

4. On "Name your application," enter AddressBook in the **Application Name** field, and then click **Finish** to skip the rest of the steps.

   The application displays the Features list.

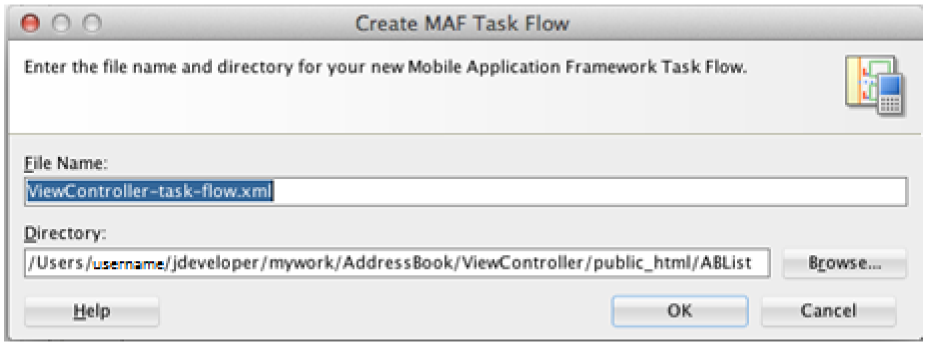


5. In the Features section, click the **green plus sign** to add a new feature to the list.



Feature Name: ABList
Feature ID: ABList
Directory: /Users/username/jdeveloper/mywork/AddressBook/ViewController/public_html/ABList
☑ Add a corresponding feature reference to maf-application.xml

6. On Create MAF Feature, enter ABList in the **Feature Name** and **Feature ID** fields.
7. Click **OK**.
8. Select the **Content** tab.
9. Change the Content Type to MAF Task Flow.
10. Click the add button next to the **File** field.

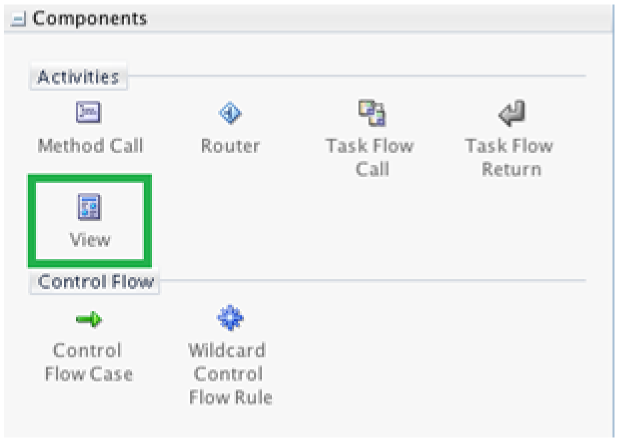


Enter the file name and directory for your new Mobile Application Framework Task Flow.

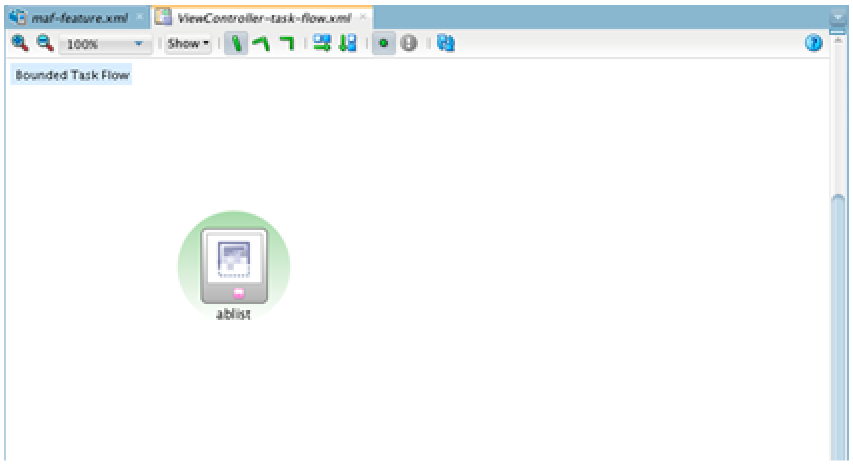
File Name: ViewController-task-flow.xml
Directory: /Users/username/jdeveloper/mywork/AddressBook/ViewController/public_html/ABList

11. On Create MAF Task Flow, use the default name in the **File Name** field for the task flow and click **OK**.

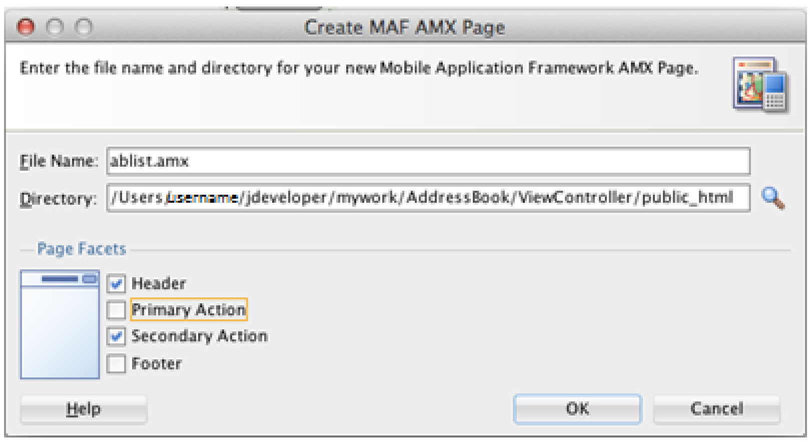
JDeveloper displays the new task flow.



12. In the Components window on the right, click the **View** button to add a new view to the task flow.
13. Name the new view ablist.



14. On the ViewController-task-flow.xml tab, double-click the new **ablist** view element to create the view page.


Create MAF AMX Page

Enter the file name and directory for your new Mobile Application Framework AMX Page.

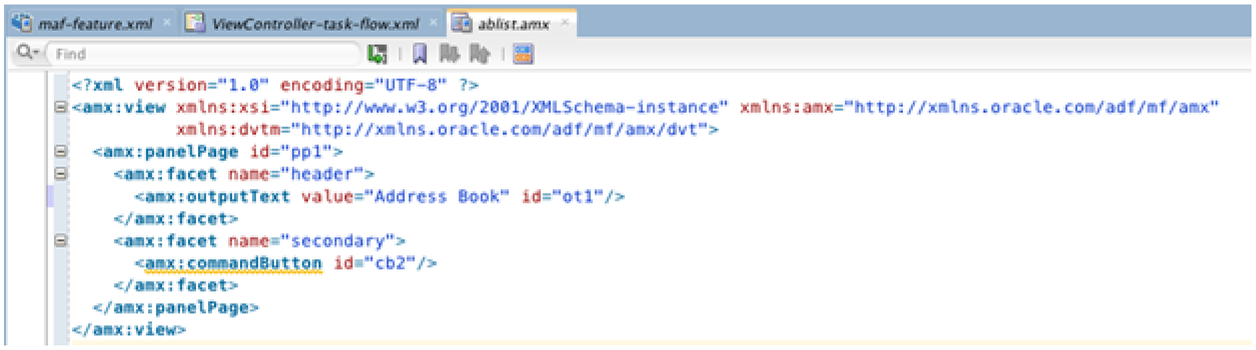
File Name: ablist.amx

Directory: /Users/username/jdeveloper/mywork/AddressBook/ViewController/public_html

Page Facets

- [✓] Header
- [ ] Primary Action
- [✓] Secondary Action
- [ ] Footer

The new page opens automatically.



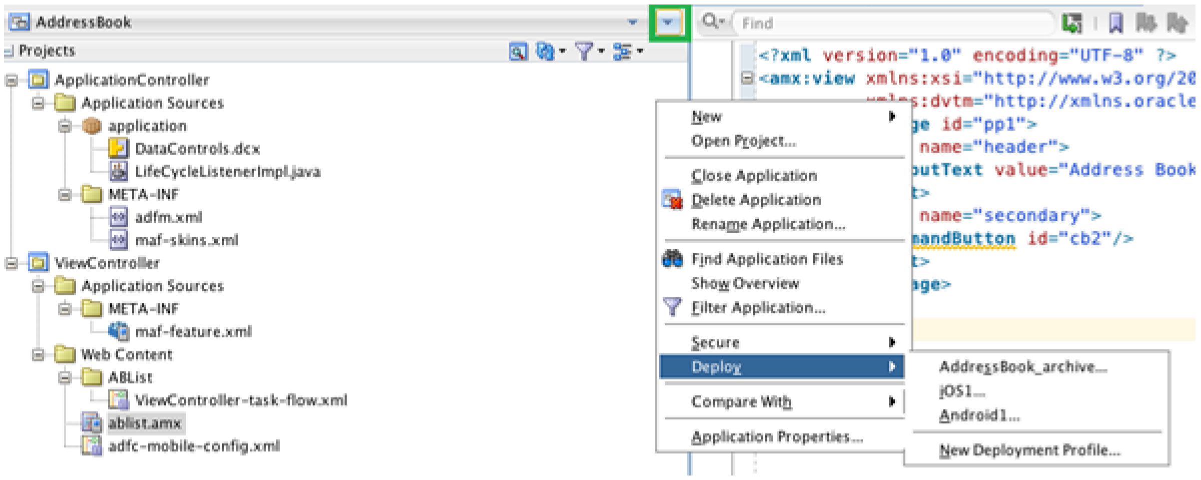
maf-feature.xml | ViewController-task-flow.xml | ablist.amx

```
<?xml version="1.0" encoding="UTF-8" ?>
<amx:view xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:amx="http://xmlns.oracle.com/adf/mf/amx"
          xmlns:dvtm="http://xmlns.oracle.com/adf/mf/amx/dvt">
  <amx:panelPage id="pp1">
    <amx:facet name="header">
      <amx:outputText value="Address Book" id="ot1"/>
    </amx:facet>
    <amx:facet name="secondary">
      <amx:commandButton id="cb2"/>
    </amx:facet>
  </amx:panelPage>
</amx:view>
```

15. On the ablist.amx tab, change the `outputText value` to "Address Book" as shown in the preceding example. This is the title for the first page of the sample mobile application.
16. Save your application.

Running the Mobile Application in the Simulator

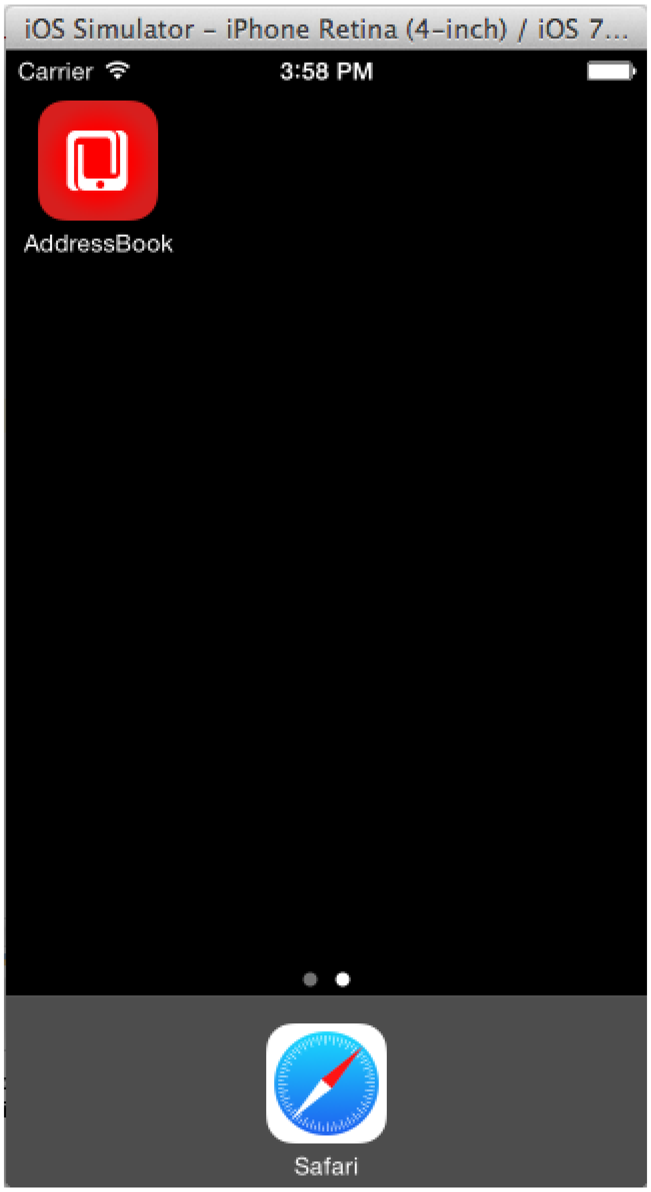
To run the mobile application in the simulator:



1. From the application drop-down, select **Deploy > iOS1**.
2. On Deployment Action, select **Deploy application to simulator** and click **Finish**.

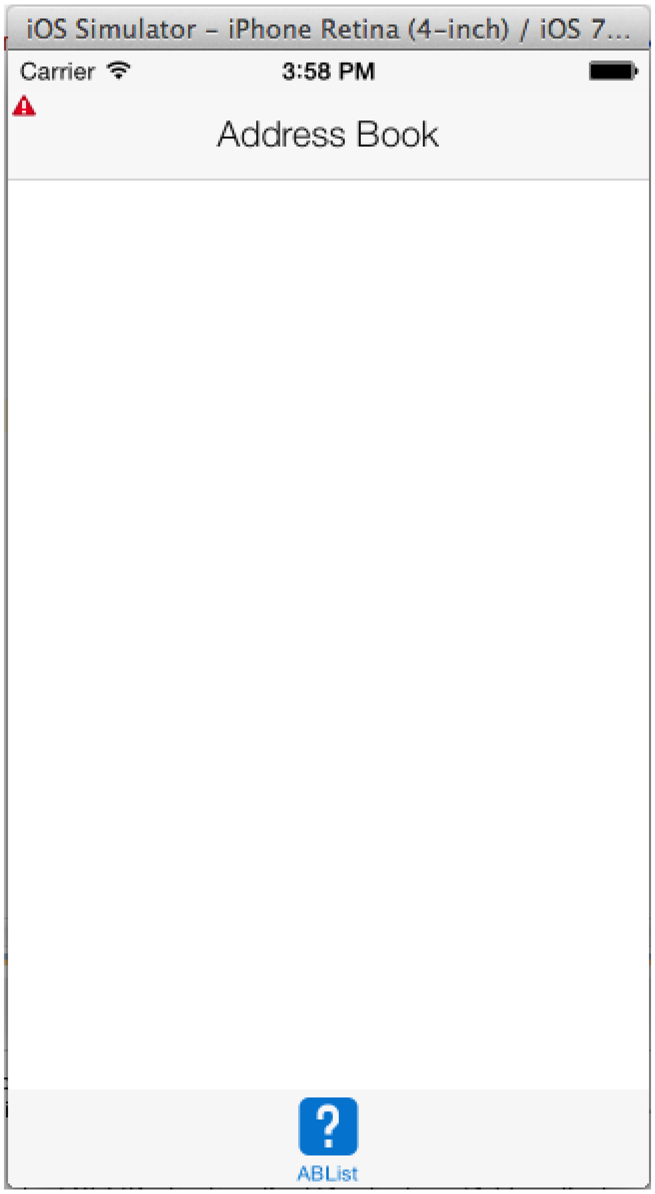
   Deployment details can be viewed in the deployment log. Wait for it to finish.

   The simulator displays the application on the second page of the home screen.



3. Click the application icon to launch it.

   The page that you created appears with the header text "Address Book," as shown in the following example:



If your mobile application failed to build or deploy at this point, please refer to the *Oracle Fusion Middleware Developing Mobile Applications with Oracle Mobile Application Framework* documentation for more information:

http://docs.oracle.com/middleware/mobile200/mobile/develop/index.html

Using the JDE Mobile Helpers

This section describes how to incorporate the JDE Mobile Helpers into the sample mobile application.

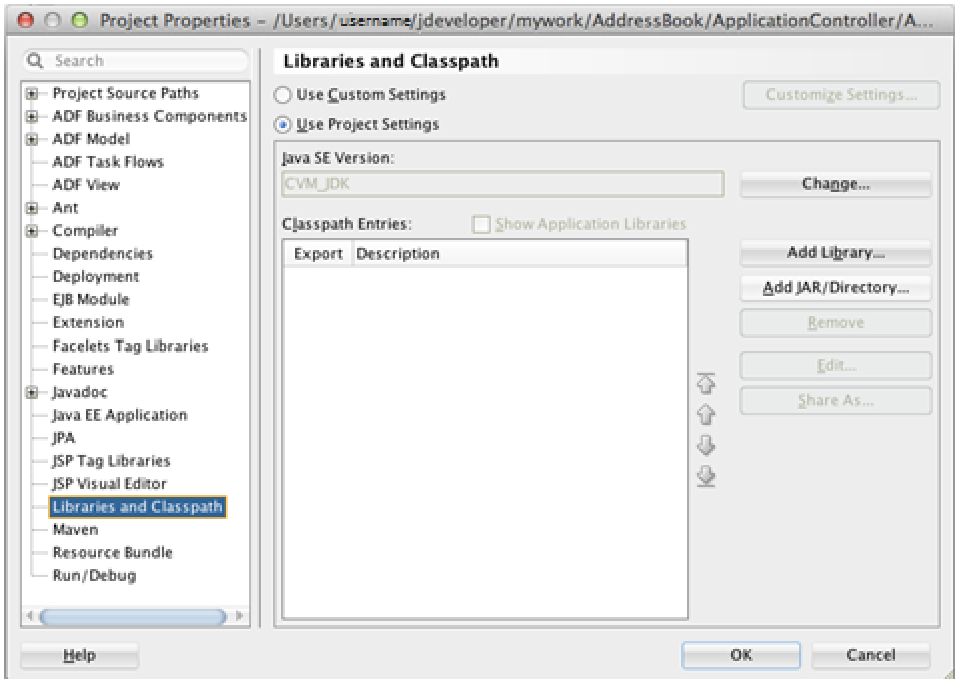
See *JDE Mobile Helpers* for more information.

Including the JDEMobileFramework.jar

The JDEMobileFramework.jar provides a set of classes and API methods that enable the mobile application to manage (create, read, update, delete) data in EnterpriseOne through REST services.

To include the JDEMobileFramework.jar:

1. In JDeveloper, in the Projects panel, right-click the **ApplicationController** project and select **Project Properties**.
2. On Project Properties, select **Libraries and Classpath**.



3. Click the **Add JAR/Directory** button and select the JDEMobileFramework.jar that you downloaded to your local file system, and click **Open**.

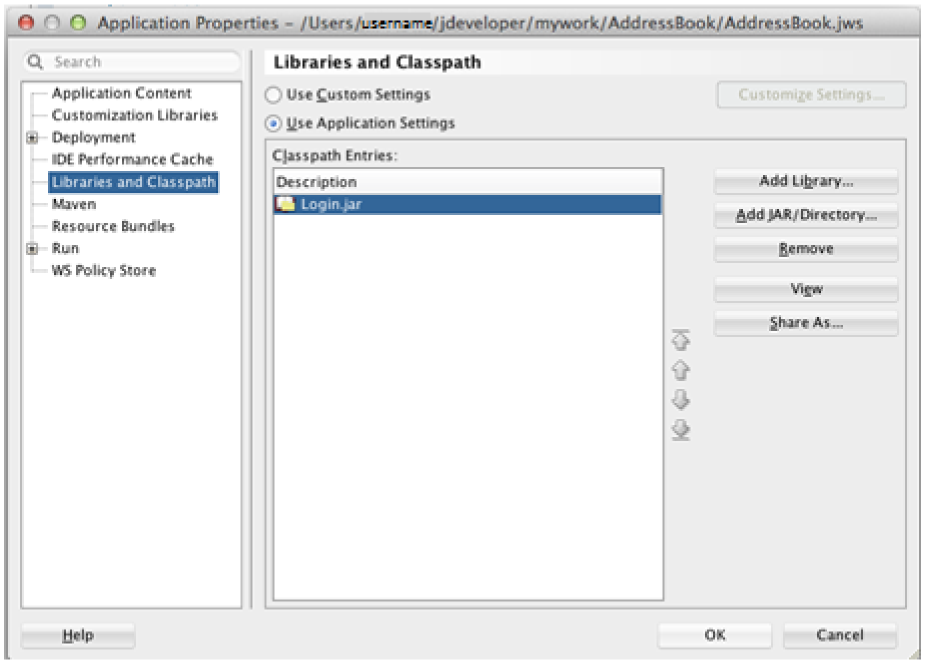
   If you do not have JDEMobileFramework.jar, see *Prerequisites* in this guide.
4. Click **OK** to save the properties. If you receive an error message, ignore it and click **Cancel**.

Including the Login.jar

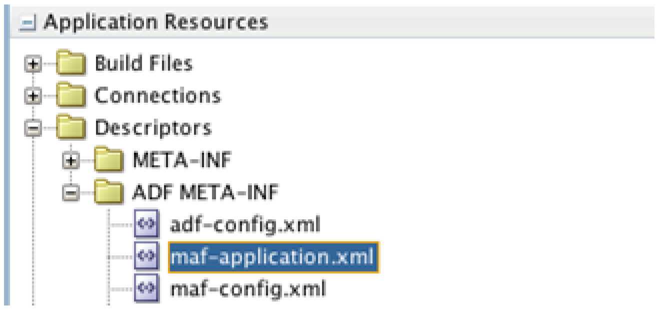
The Login.jar provides a configuration page, login page, and a springboard. The springboard contains links to Legal Terms or the End User License Agreement (EULA), About, and Logout.

To include the Login.jar:

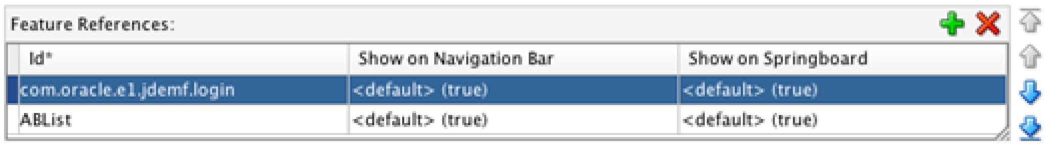
1. In JDeveloper, click the Applications drop-down menu and select **Application Properties**.



2. On Application Properties, select **Libraries and Classpath**, and then click the **Add JAR/Directory** button to add the Login.jar.
3. Click **OK** to save the properties.

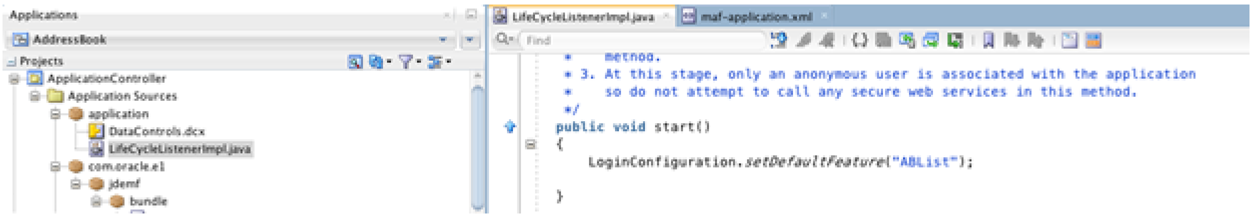


4. In the Application Resources section, expand **Descriptors > ADF META-INF**, and double-click **maf-application.xml** to open it.
5. Click the Feature References tab, and then click the **green plus sign** to add a feature reference.
6. Click the **Id** drop-down menu and select **com.oracle.e1.jdemf.login**. If you receive an error message, ignore it and click **Cancel**.


Feature References:

Id*	Show on Navigation Bar	Show on Springboard
com.oracle.e1.jdemf.login	<default> (true)	<default> (true)
ABList	<default> (true)	<default> (true)

7. Use the blue arrow on the right to move the login feature to the top of the list.
8. On the Application tab, clear the **Show Navigation Bar on Application Launch** check box.
9. In the Projects panel, expand **ApplicationController > Application Sources > application** and double-click **LifeCycleListener.java** to open it.



```
 *    method.
 * 3. At this stage, only an anonymous user is associated with the application
 *    so do not attempt to call any secure web services in this method.
 */
public void start()
{
    LoginConfiguration.setDefaultFeature("ABList");
}
```

10. On the LifeCycleListener.java tab, place the following line of code in the existing start() method, as shown in the preceding example:

    `LoginConfiguration.setDefaultFeature("ABList");`

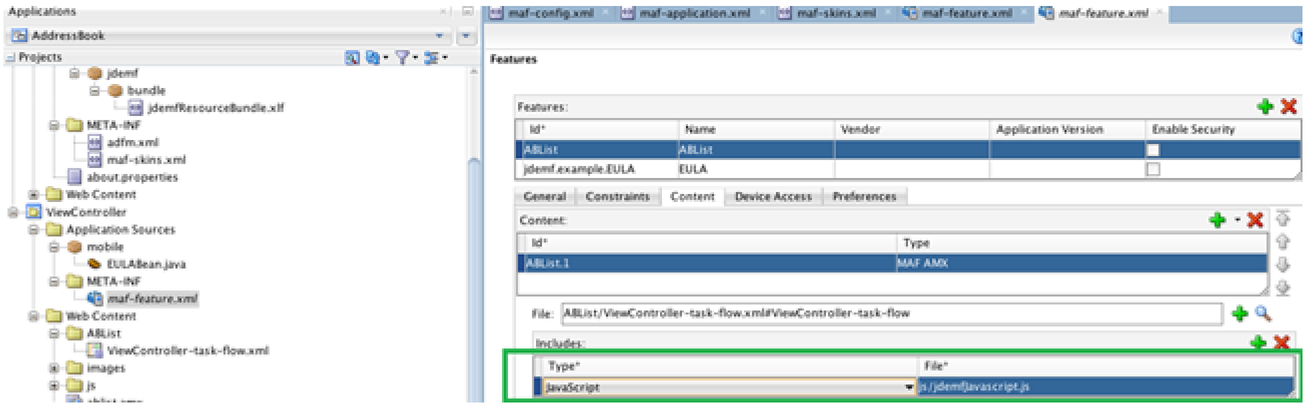
    This code directs the Login feature to navigate to the appropriate page after a successful login.
11. Save the LifeCycleListener.java.

Including the Javascript and CSS

The Javascript and CSS files are dependencies of the JDEMobileFramwork.jar and the Login.jar. The Javascript provides an animated icon to show that the mobile application is processing while making service calls. The CSS provides an extension to the styling skin provided by Oracle MAF. It enables you to make adjustments to the style of the configuration, login, and springboard pages of your mobile application.

To include the Javascript and CSS:

1. In the file system, copy the js folder provided in the JDEMobileFramework zip file, and save it to the **`ViewController/public_html`** directory.
2. In the file system, copy the css folder provided in the JDEMobileFramework zip file, and save it to the **`ApplicationController/public_html`** directory.
3. In the Projects panel in JDeveloper, expand **ViewController > Application Sources >META_INF**, and double-click the **maf-feature.xml** to open it.



Features:

Id*	Name	Vendor	Application Version	Enable Security
ABList	ABList			☐
jdemf.example.EULA	EULA			☐

Content:

Id*	Type
ABList.1	MAF AMX

File: ABList/ViewController-task-flow.xml#ViewController-task-flow

Includes:

Type*	File*
JavaScript	js/jdemfJavascript.js

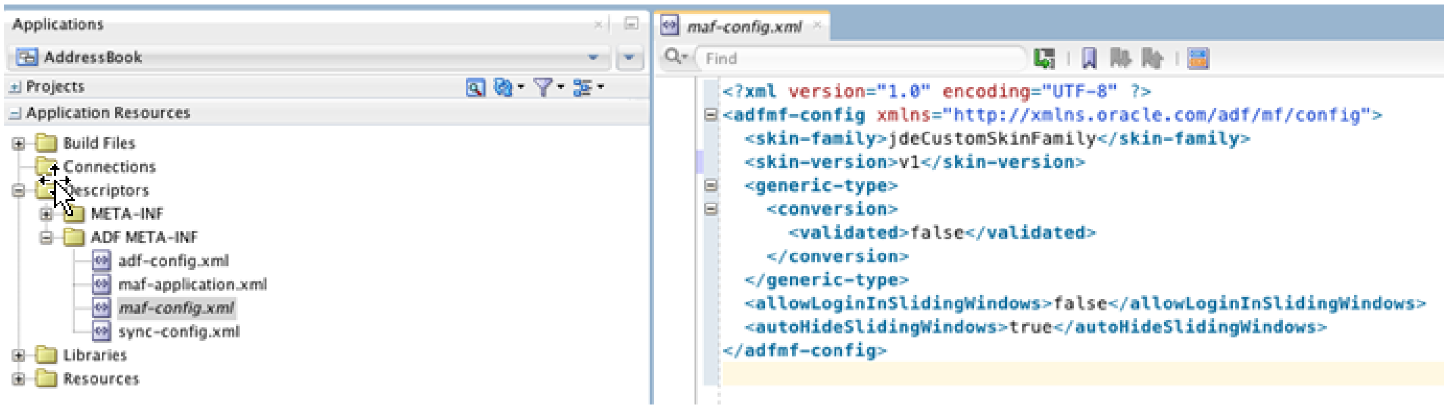
4. Select the **ABList** feature, click the Content tab, and click the **plus sign** in the Includes section to add the jdemafJavascript.js file. This file is located in js folder.
5. Under **ApplicationController > Application Sources > META-INF**, open the maf-skins.xml and copy the following code into the file:

    Note: Remove any code lines that might exist before you copy the following code into the file.

```
<?xml version="1.0" encoding="UTF-8" ?>
<adfmf-skins xmlns="http://xmlns.oracle.com/adf/mf/skin">
    <skin id="s1">
```

```
            <family>jdeCustomSkinFamily</family>
            <id>jdeCustomSkinFamily-v1.Android</id>
            <extends>jdeCustomSkinFamily</extends>
            <style-sheet-name>css/jdemfCustomStyles-Android.css</style-sheet-name>
            <version>
                <name>v1</name>
                <default>true</default>
            </version>
        </skin>
        <skin id="s2">
            <family>jdeCustomSkinFamily</family>
            <id>jdeCustomSkinFamily-v1.iOS</id>
            <extends>jdeCustomSkinFamily</extends>
            <style-sheet-name>css/jdemfCustomStyles-iOS.css</style-sheet-name>
            <version>
                <name>v1</name>
                <default>true</default>
            </version>
        </skin>
        <skin id="s3">
            <family>jdeCustomSkinFamily</family>
            <id>jdeCustomSkinFamily</id>
            <extends>mobileAlta-v1.1</extends>
            <style-sheet-name>css/jdemfCustomStyles-Base.css</style-sheet-name>
            <version>
                <name>v1</name>
                <default>true</default>
            </version>
        </skin>
    </adfmf-skins>
```

6. In the Application Resources panel, expand **Descriptors > ADF META-INF**, and open the **maf-config.xml**.
7. Enter jdeCustomSkinFamily for the <skin-family> and enter v1 for the <skin-version>, as show in the following example:



```
<?xml version="1.0" encoding="UTF-8" ?>
<adfmf-config xmlns="http://xmlns.oracle.com/adf/mf/config">
  <skin-family>jdeCustomSkinFamily</skin-family>
  <skin-version>v1</skin-version>
  <generic-type>
    <conversion>
      <validated>false</validated>
    </conversion>
  </generic-type>
  <allowLoginInSlidingWindows>false</allowLoginInSlidingWindows>
  <autoHideSlidingWindows>true</autoHideSlidingWindows>
</adfmf-config>
```

Including the Resource Bundle

The Resource Bundle contains text resources for the pages provided in the Login.jar.

To include the Resource Bundle:

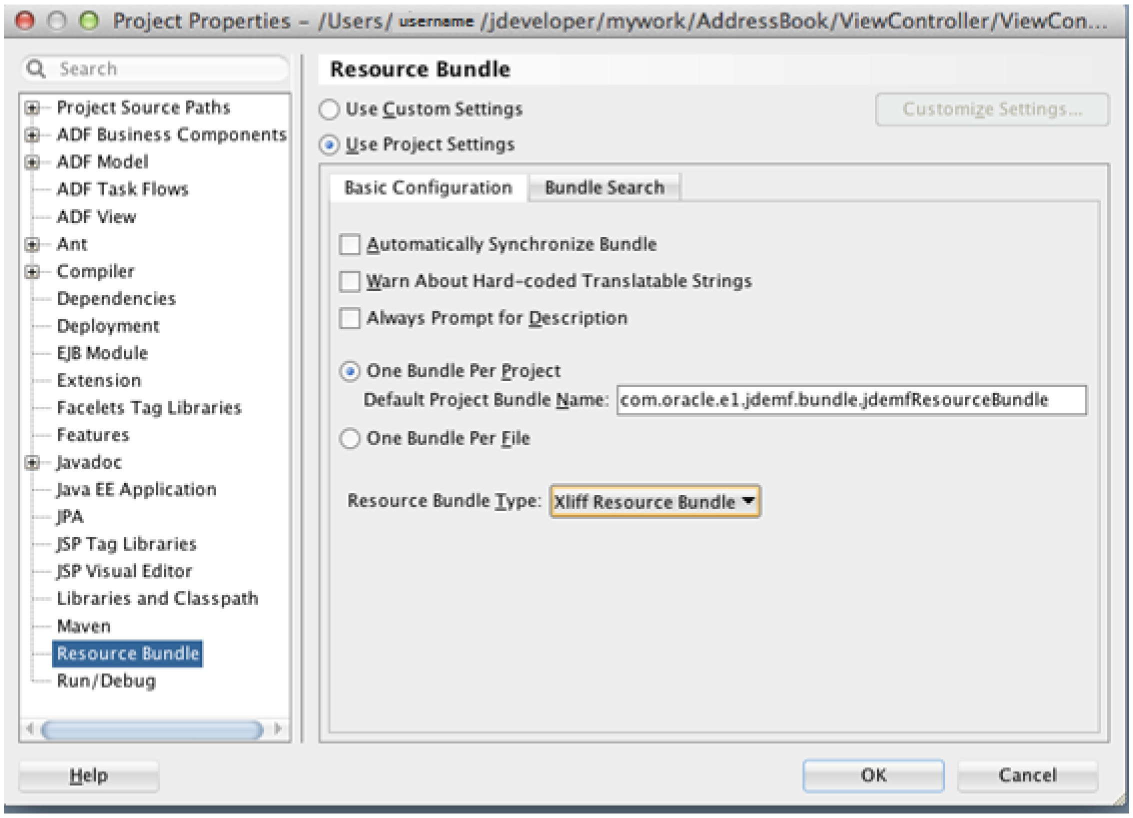
1. Copy the **jdemfResourceBundle.xlf** file provided in the JDEMobileFramework zip file and save it to the following directory:

   `ApplicationController/src/com/oracle/e1/jdemf/bundle`

You must add each directory in the path if it does not exist.

> **Note:** The ViewController project is dependent on the ApplicationController project. Adding the bundle to the ApplicationController project will also make it available to the ViewController project.

2. In JDeveloper, click the "**refresh**" button for the bundle to appear under com.oracle.e 1.
3. Right-click **ViewController** and select **Project Properties**.
4. On Project Properties, select **Resource Bundle**.



Project Properties – /Users/ username /jdeveloper/mywork/AddressBook/ViewController/ViewCon...

Resource Bundle

Use Custom Settings

[✓ Use Project Settings]

Automatically Synchronize Bundle

Warn About Hard-coded Translatable Strings

Always Prompt for Description

[✓ One Bundle Per Project]

Default Project Bundle Name: com.oracle.e1.jdemf.bundle.jdemfResourceBundle

One Bundle Per File

Resource Bundle Type: Xliff Resource Bundle

5. Set the Default Project Bundle Name to: `com.oracle.e1.jdemf.bundle.jdemfResourceBundle`
6. Click **OK** to save the properties. If a warning message appears, ignore it and click **Ok** or **Cancel** to proceed.

Including Logo Images

You should include a logo image for the pages in the Login.jar. If you do not insert one, a question mark (?) appears in place of the image. Oracle provides the following image files as examples of the recommended size, quality, and color of images that you should use in your mobile application:

- jde_transparent_no_jde_small.png

  This is a 242 x 87 transparent image for the login page, intended for a white background.
- jde_transparent_springboard.png

  This is a 242 x 87 transparent image for the springboard, intended for a dark background.

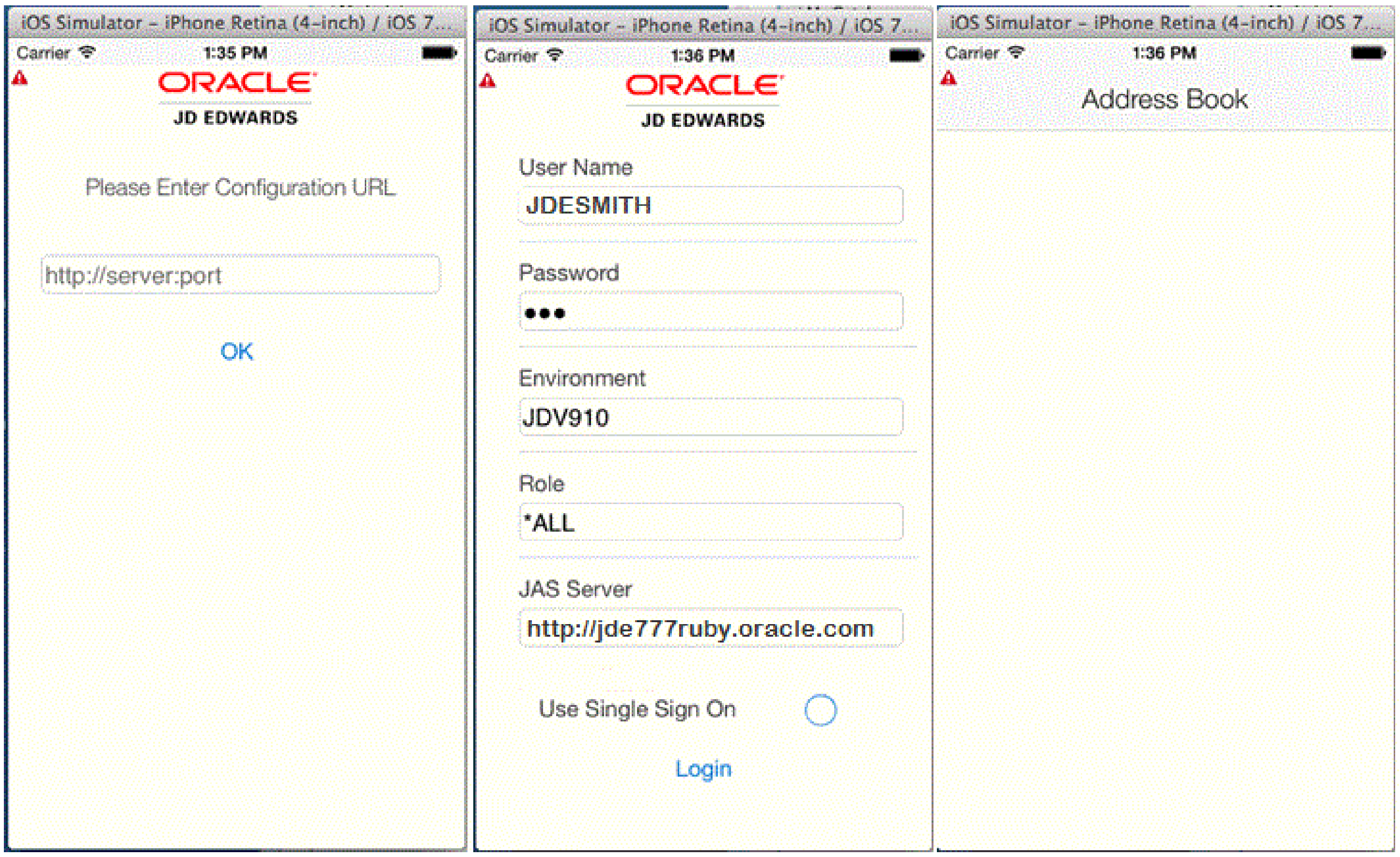
You can use any image as long as it has the same dimensions as the example images. You can use the same name for the images and place them in the same location as instructed in the following steps.

Note: Do not use the logo image examples provided by Oracle; they are provided for example purposes only.

To include logo images:

1. In the file system, copy the **jde_transparent_no_jde_small.png** file to the `ViewController/public_html/images` directory.
2. Copy the **jde_transparent_springboard.png** to the `ViewController/public_html/images` directory.
3. In JDeveloper, deploy the application.

   You should see the configuration screen and login screen. After logging in, it should take you to your ABList feature with the page with the "Address Book" title.


iOS Simulator – iPhone Retina (4-inch) / iOS 7...
Carrier
1:35 PM
ORACLE
JD EDWARDS
OK
iOS Simulator – iPhone Retina (4-inch) / iOS 7...
Carrier
1:36 PM
ORACLE
JD EDWARDS
Login
iOS Simulator – iPhone Retina (4-inch) / iOS 7...
Carrier
1:36 PM

Please Enter Configuration URL

http://server:port

User Name: JDESMITH

Password: •••

Environment: JDV910

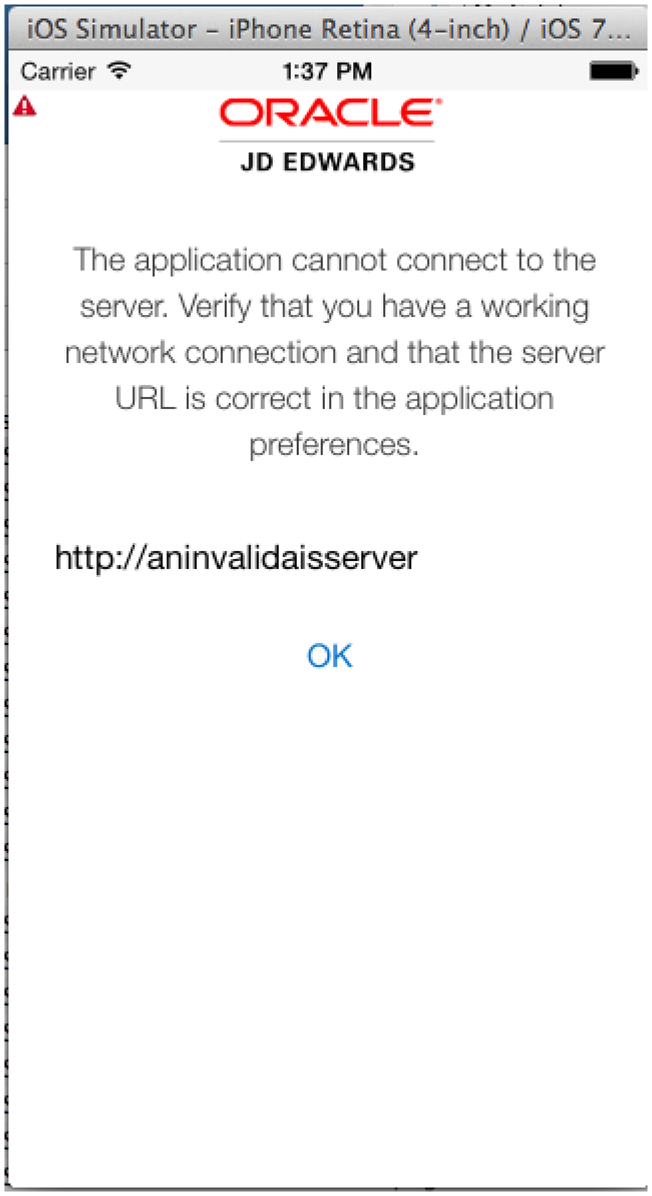
Role: *ALL

JAS Server: http://jde777ruby.oracle.com

Use Single Sign On

Address Book

The Login.jar also provides information screens if configuration or connection issues arise during login, for example:



The application cannot connect to the server. Verify that you have a working network connection and that the server URL is correct in the application preferences.

http://aninvalidaisserver

Note: If you receive an error, under the Application Resources panel in JDeveloper, double-click maf-application.xml. In the maf.application.xml tab, make sure the Files and Network options are selected.

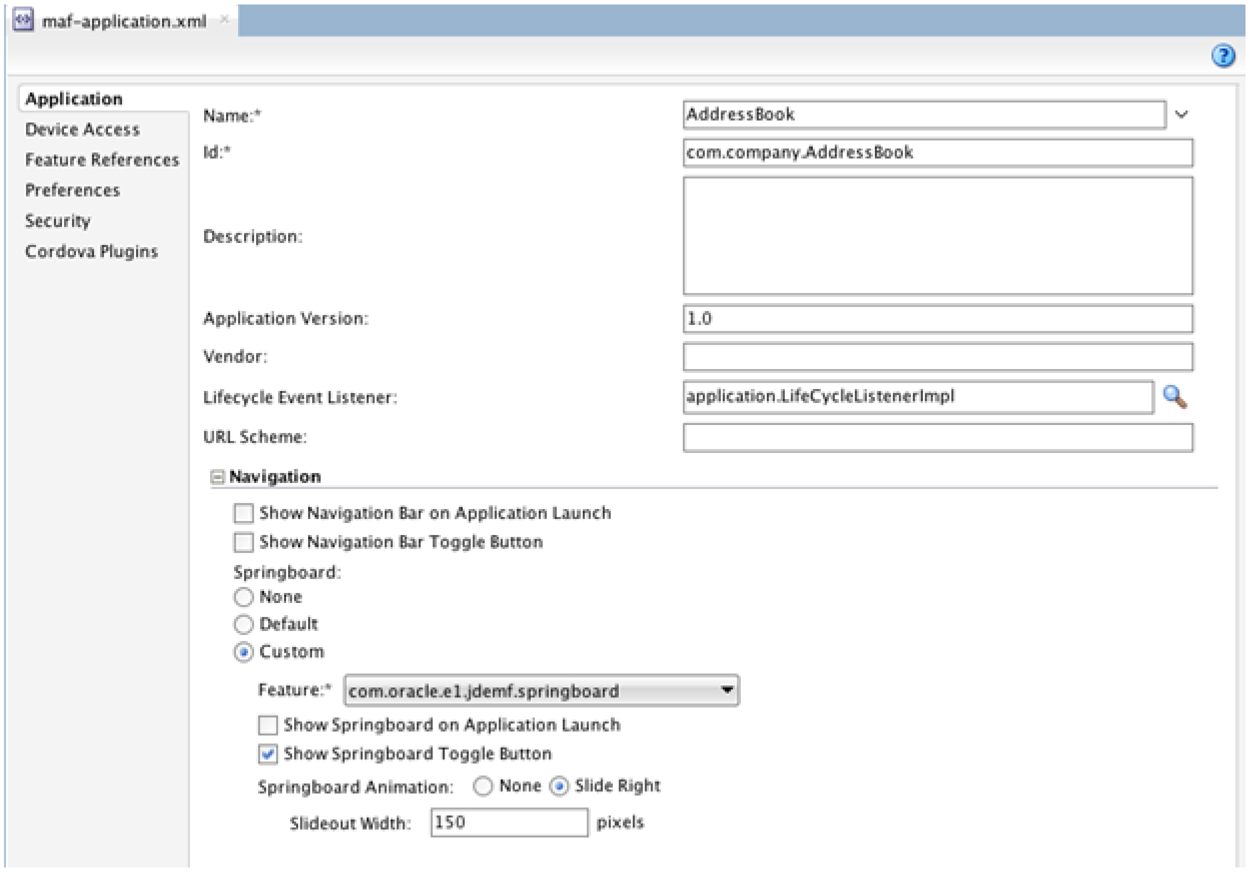
Enabling the Custom Springboard

The springboard provided in the Login.jar shows links to the About page, the EULA, and the Logout.

To enable the springboard:

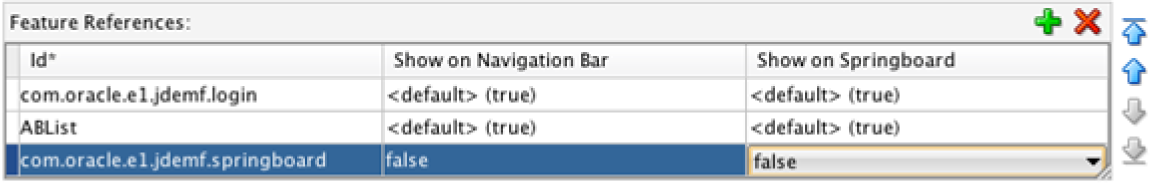
1. Open the **maf-application.xml**.
2. In the Navigation section on the Application tab, clear the **Show Navigation Bar on Application Launch** check box.

3. For Springboard, select the **Custom** option
4. In the Feature drop-down menu, select **com.oracle.e1.jdemf.springboard**.



Name:* AddressBook
Id:* com.company.AddressBook
Description:
Application Version: 1.0
Vendor:
Lifecycle Event Listener: application.LifeCycleListenerImpl
URL Scheme:
Navigation
[ ] Show Navigation Bar on Application Launch
[ ] Show Navigation Bar Toggle Button
Springboard: None Default [✓ Custom]
Feature:* com.oracle.e1.jdemf.springboard
[ ] Show Springboard on Application Launch
[✓] Show Springboard Toggle Button
Springboard Animation: None [✓ Slide Right]
Slideout Width: 150 pixels

5. Select the **Show Springboard Toggle Button** check box.
6. For Springboard Animation, select the **Slide** option.
7. In the Slideout Width field, enter 150.
8. Clear any other check boxes and then click the **Feature References** tab.



Feature References:

Id*	Show on Navigation Bar	Show on Springboard
com.oracle.e1.jdemf.login	<default> (true)	<default> (true)
ABList	<default> (true)	<default> (true)
com.oracle.e1.jdemf.springboard	false	false

9. In the Feature References section, click the **green plus sign** to add the springboard feature, and then select **false** for both the "Show on Navigation Bar" and "Show on Springboard" options.

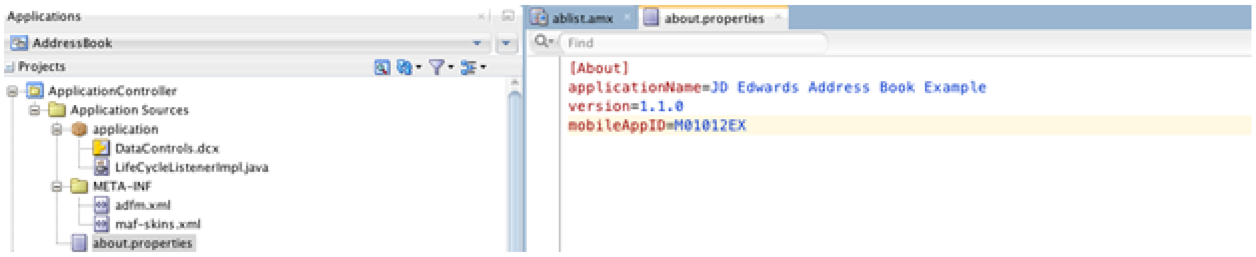
Including the about.properties

The about.properties enables you to configure information displayed on the About page, including the application name, application version, and the application ID (which is used by EnterpriseOne application security for authorizing user access to the mobile application). If you enable the springboard, you should provide these values so that they appear on the About page.

To include the about.properties:

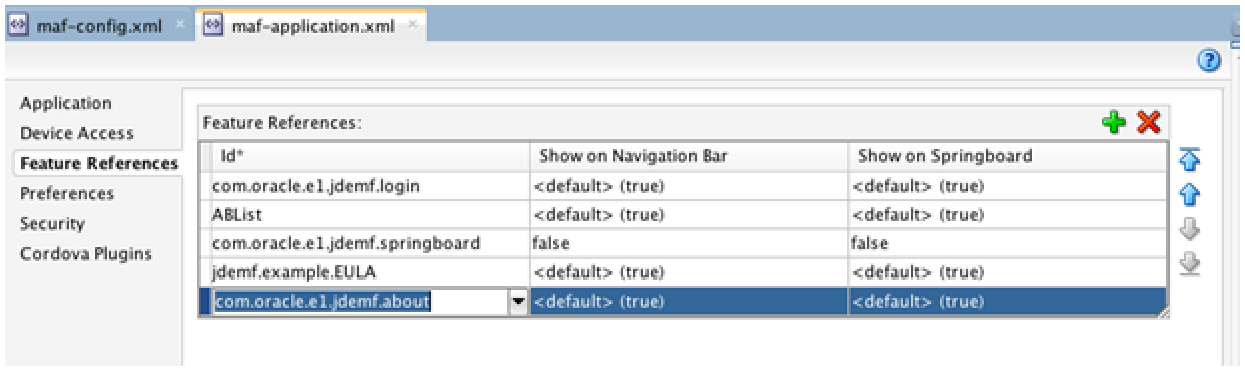
1. Copy the **about.properties** file provided in the JDEMobileFramework zip file and save it in the `ApplicationController/src` directory.

2. In the Projects panel, expand **Application Controller > Application Sources**, and double-click **about.properties** to open it.



```
[About]
applicationName=JD Edwards Address Book Example
version=1.1.0
mobileAppID=M01012EX
```

3. Modify the about.properties file with information for your application, as shown in the preceding example.
4. Click the **Feature References** tab.



Feature References:

Id*	Show on Navigation Bar	Show on Springboard
com.oracle.e1.jdemf.login	<default> (true)	<default> (true)
ABList	<default> (true)	<default> (true)
com.oracle.e1.jdemf.springboard	false	false
jdemf.example.EULA	<default> (true)	<default> (true)
com.oracle.e1.jdemf.about	<default> (true)	<default> (true)

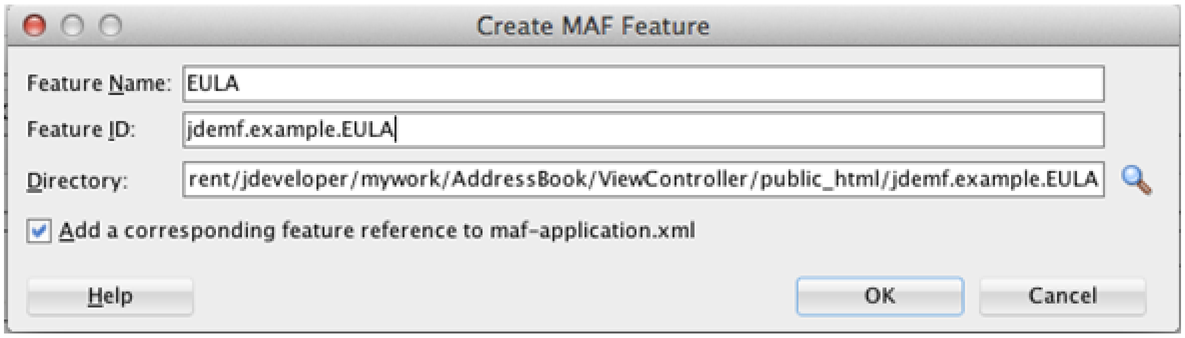
5. In the Feature References section, click the **green plus sign** to add the com.oracle.e1.jdemf.about feature.

Including an End User License Agreement (EULA)

If you enable the springboard, you should include a EULA feature and EULA page so the Legal Terms link has a page to access. You can provide a license agreement for your application here.

To include a EULA:

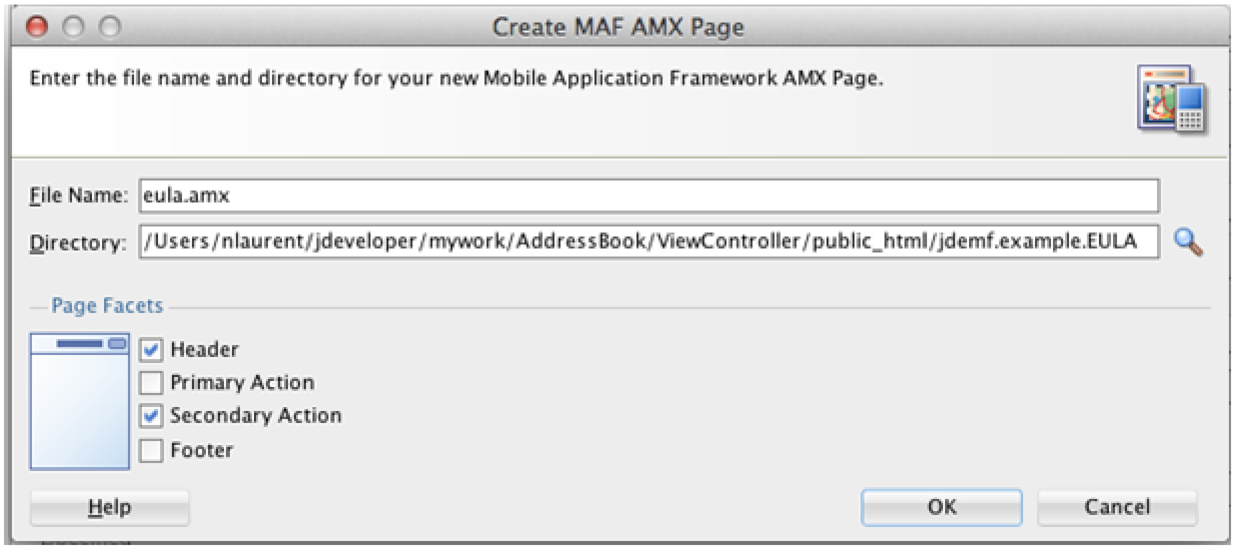
1. Double-click the **maf-feature.xml**.
2. In the Features section, double-click the **green plus sign** to add a feature for the EULA.



Feature Name:	EULA
Feature ID:	jdemf.example.EULA
Directory:	rent/jdeveloper/mywork/AddressBook/ViewController/public_html/jdemf.example.EULA

☑ Add a corresponding feature reference to maf-application.xml

3. On Create MAF Feature, enter EULA in the **Feature Name** field, give it a unique id, and then click **OK**.
4. After you create the EULA feature, select the **Content** tab.
5. Click the **green plus sign** next to the File field.



Enter the file name and directory for your new Mobile Application Framework AMX Page.

File Name: eula.amx

Directory: /Users/nlaurent/jdeveloper/mywork/AddressBook/ViewController/public_html/jdemf.example.EULA

Page Facets

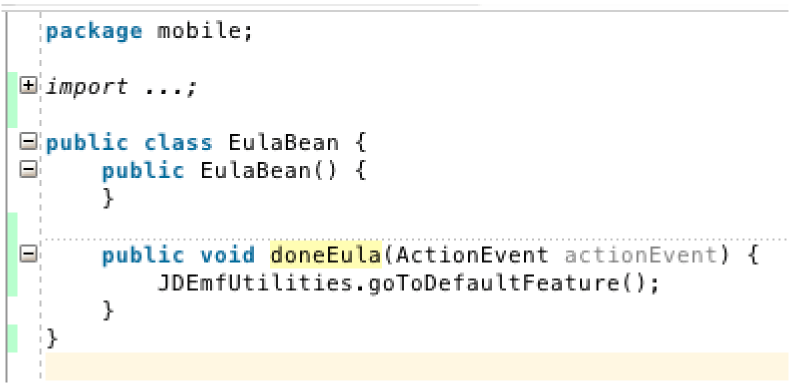
- [✓] Header
- [ ] Primary Action
- [✓] Secondary Action
- [ ] Footer

6. On Create MAF AMX Page, enter a name for the page in the **File Name** field.
7. Clear the **Primary Action** check box, and then click **OK**.
8. In the new eula.amx page, you can design your EULA page as needed, as shown in the below example.
   Example - Using the Verbatim Tag to Include HTML
   The following sample code is an example of a page that uses the verbatim tag to include HTML. It also uses the configured resource bundle (loadBundle tag).

```
<?xml version="1.0" encoding="UTF-8" ?>
<amx:view xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:amx="http://
xmlns.oracle.com/adf/mf/amx"
          xmlns:dvtm="http://xmlns.oracle.com/adf/mf/amx/dvt">
<amx:loadBundle basename="com.oracle.e1.jdemf.bundle.jdemfResourceBundle"
 var="jdeBundle" id="lb1"/>
  <amx:panelPage id="pp1">
       <amx:facet name="header">
            <amx:outputText value="#{jdeBundle.LEGAL_TERMS}" id="ot1"/>
        </amx:facet>
        <amx:facet name="secondary">
        <amx:commandButton   text="#{jdeBundle.DONE}" id="cb1"
 actionListener="#{eulaBean.doneEULA}"/>
        </amx:facet>
          <amx:verbatim id="v1">

    <![CDATA[

<p class="MsoNormal"
 style="margin-bottom: 0.0001pt; text-align: center; line-height: normal;"><b><span
 style="font-size: 12pt; font-family: &quot;Arial&quot;,&quot;sans-serif&quot;;
 color: black;">MY END
USER LICENSE
AGREEMENT</span></b>
</p>
    Legal....

    ]]>
    </amx:verbatim>
  </amx:panelPage>
```

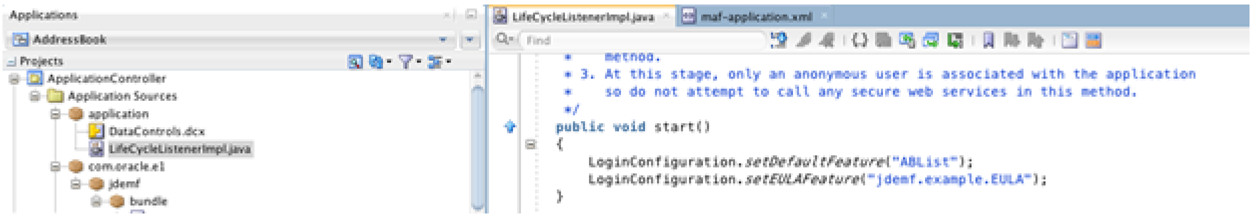
```
</amx:view>
```

9. Save the EULA page.
10. In the Projects panel, right-click **ViewController** and select **Project Properties**.
11. On Project Properties, select **Dependencies**, select the **ApplicationController.jpr**, and click the **green plus sign** button.
12. On Edit Dependencies, click the **Build Output** check box, click **OK**, and then click **OK** again to close the Project Properties.
13. Add code for the Done button, which returns the user to the application after viewing the EULA. To do so:
    a. In the Projects panel, expand **ViewController > Web Content**, and double-click the **eula.amx**.
    b. In the eula.amx code, highlight the **commandButton** element.
    c. In the Button - Done - Properties window on the right, hover over the **Action Listener** field and click the "**gear**" button, and select **Edit**.
    d. On "Edit Property: Action Listener," click the **New** button to create a new managed bean.
    e. On Create Managed Bean, complete the following fields and then click **OK**:
       -**Bean Name**: eulaBean
       -**Class Name**: EulaBean
       -**Scope**: pageFlow
    f. Click the **New** button next to the **Method** field to create a new method for the bean.
    g. On Create Method, enter doneEULA in the **Method Name** field and click **OK**.
    h. On "Edit Property: Action Listener," click **OK** to accept the new bean and method.
       This adds the new bean method to the action listener.
    i. In the code, right-click the `doneEula` method name and select **Go to Declaration**.
    j. In the new method, replace the `//add event code here...` comment with this line of code:
       `JDEmfUtilities.goToDefaultFeature();`
       Your new method should look like this:



```
package mobile;

import ...;

public class EulaBean {
    public EulaBean() {
    }

    public void doneEula(ActionEvent actionEvent) {
        JDEmfUtilities.goToDefaultFeature();
    }
}
```

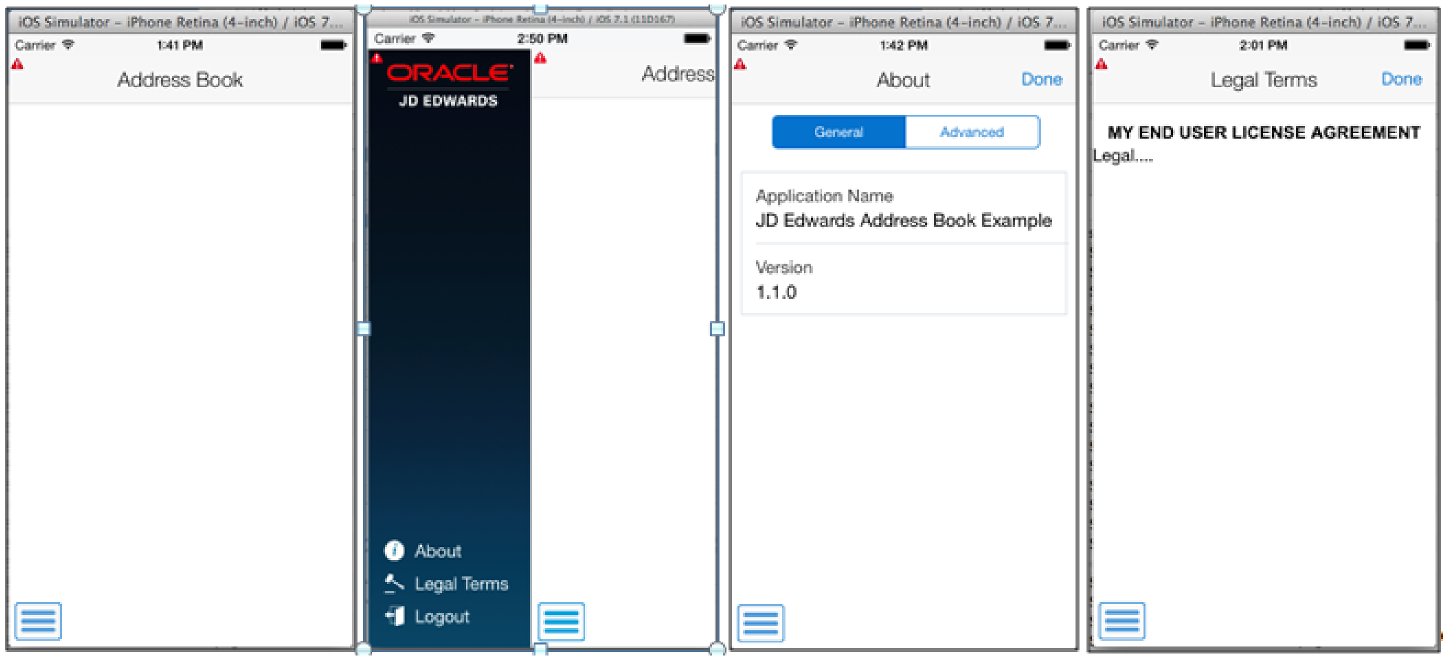
14. In the Projects panel, expand **Application Controller > Application Sources > application**, and double-click the **LifeCycleListenerImple.java**.
15. Add the following line of code to the start() method to set the EULA Feature, and make sure to use the feature ID that you used to create the feature. If you do not remember it, you can find the ID in the maf-feature.xml.
    `LoginConfiguration.setEULAFeature("jdemf.example.EULA");`
    The following example shows the line in the LifeCycleListenerImple.java:



```
     *     method.
     * 3. At this stage, only an anonymous user is associated with the application
     *    so do not attempt to call any secure web services in this method.
     */
    public void start()
    {
        LoginConfiguration.setDefaultFeature("ABList");
        LoginConfiguration.setEULAFeature("jdemf.example.EULA");
    }
```

16. Deploy the application again. You should see a springboard launch icon.

    The page displays the About, Legal Terms, and Logout links. The About page shows the information in about.properties; the Legal Terms page shows the eula.amx page:

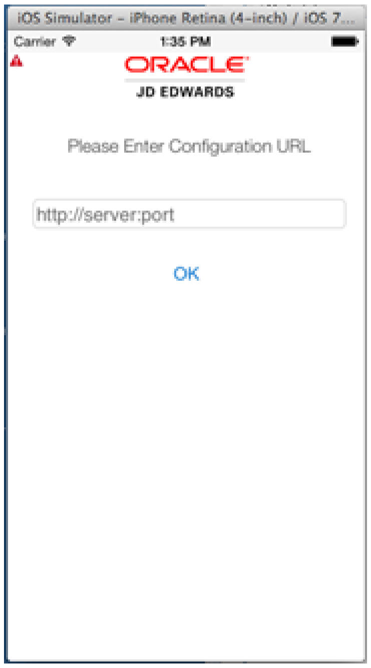


Connecting to the EnterpriseOne Application Interface Services (AIS) Server

After you configure the Login.jar, the application displays a configuration screen for connecting to the AIS Server.

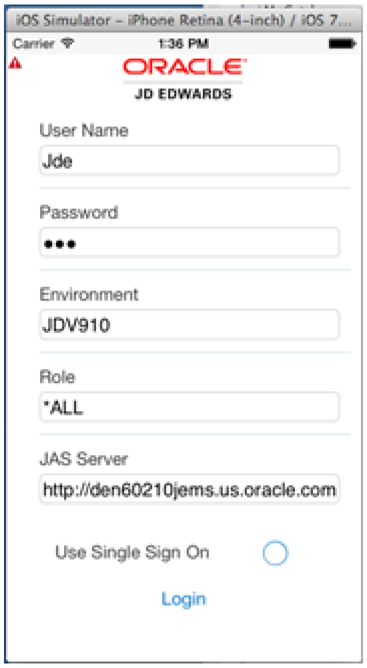
To connect to the AIS Server:

1. On the first page in the mobile application, enter the URL to the AIS Server and click **OK**:


iOS Simulator - iPhone Retina (4-inch) / iOS 7...
Carrier
1:35 PM
ORACLE
JD EDWARDS
Please Enter Configuration URL
http://server:port
OK

Note: If you are using Oracle Mobile Cloud Service (MCS) to host your mobile applications, instead of entering the URL to the AIS Server, enter the URL to your MCS Instance. See *Generating a New Mobile Application from a Mobile Application Archive* for more information.

2. If the connection is successful, enter your EnterpriseOne user name and password in the following login page:



Based on the AIS Server configuration, the Environment, Role, and JAS Server fields, as well as the "Use Single Sign On" check box, may or may not be displayed here.

3. Click **Login**.

If the application takes you to the ABList feature, you have successfully established a session with the AIS Server. Your mobile application can make service calls.

AIS Client Class Generator

The AIS Client Class Generator is a JDeveloper extension that generates Java classes to store data returned from the REST service calls.

You must configure the AIS Client Class Generator before you can use it to generate classes. See "Configuring the AIS Client Class Generator" in the *JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* .

Reading EnterpriseOne Data

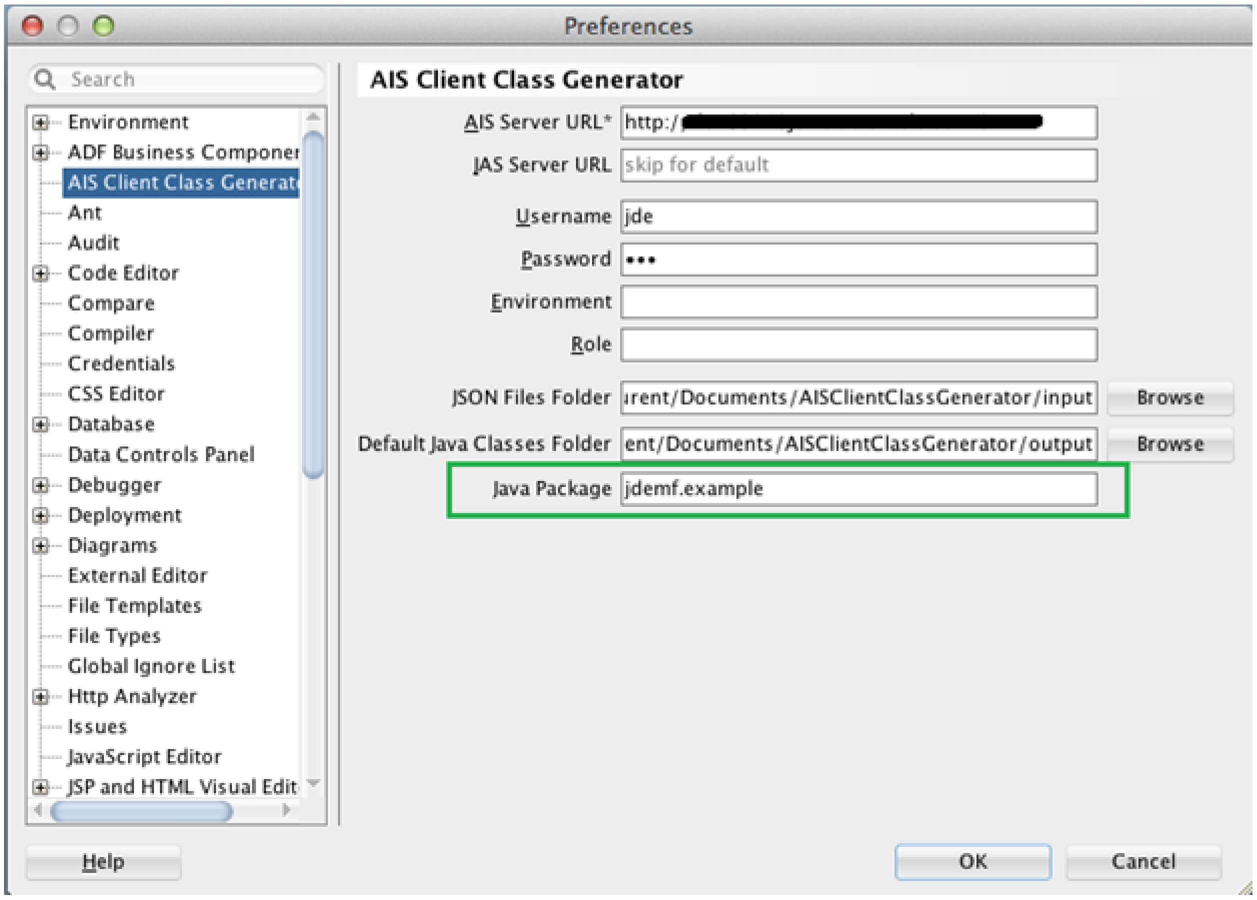
The JDEMobileFramework.jar includes APIs that enable the mobile application to make service calls to EnterpriseOne and read data from EnterpriseOne.

You use the AIS Client Class Generator to generate classes to hold the data returned from those calls. To do so, perform the following tasks:

- Configure the AIS Client Class Generator to generate classes in a custom package.
- Create a new Java class in the application package.
- Call the AIS service for populating the data in the Data Control.
- Create a UI for displaying the data.

To use the AIS Client Class Generator to generate classes in a custom package:

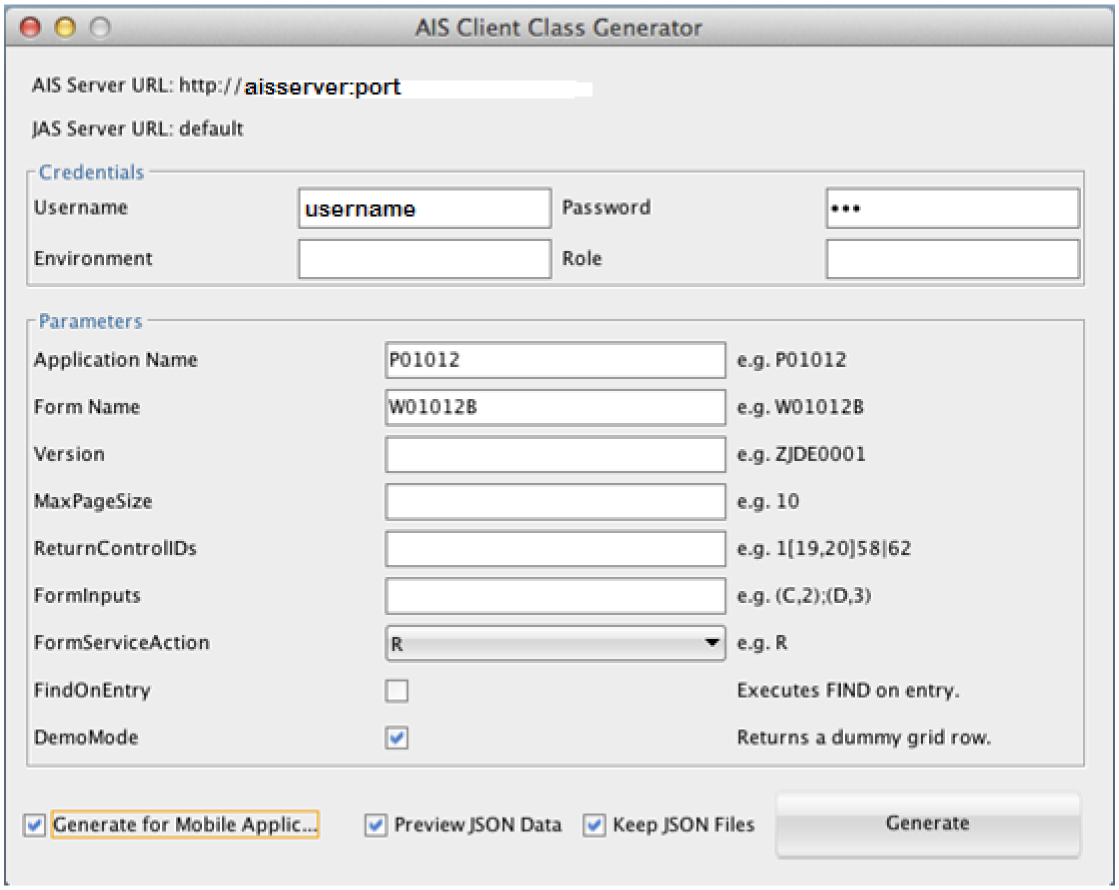
1. In JDeveloper, select the **Tools** menu, **Preferences**.



AIS Client Class Generator

AIS Server URL*	http:/[redacted]
JAS Server URL	skip for default
Username	jde
Password	•••
Environment	
Role	
JSON Files Folder	ırent/Documents/AISClientClassGenerator/input
Default Java Classes Folder	ent/Documents/AISClientClassGenerator/output
Java Package	jdemf.example

2. Select **AIS Client Class Generator** from the list on the left.
3. In the **Java Package** field, enter a valid package name, and then click **OK**.
4. In the Projects panel, click **ApplicationController** to highlight it. You must make sure that this is highlighted before generating classes.
5. Select the **Tools** menu, **AIS Client Class Generator** to launch it.


AIS Client Class Generator

AIS Server URL: http://aisserver:port

JAS Server URL: default

Credentials

Username	username	Password	•••
Environment		Role	

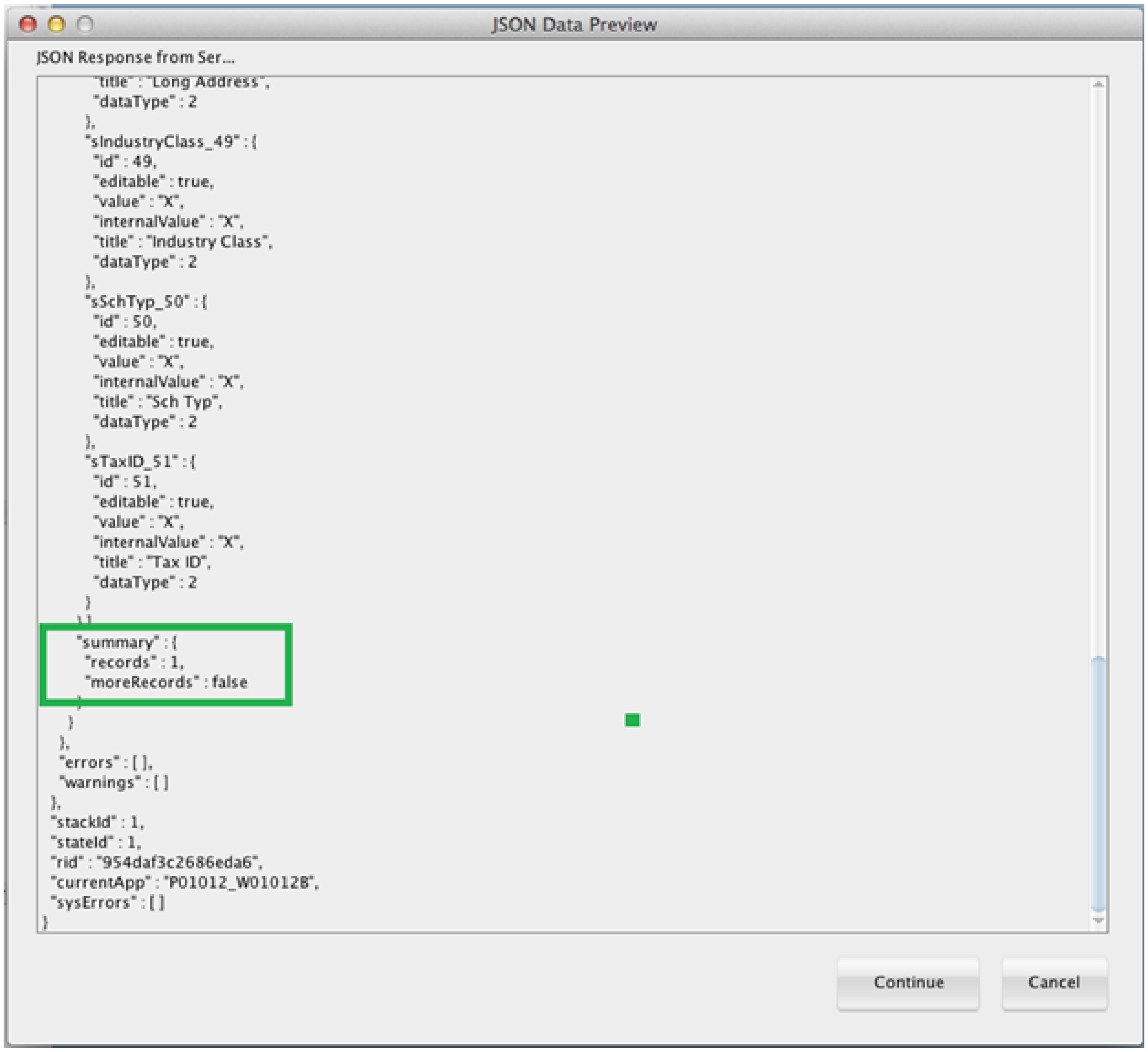
Parameters

Application Name	P01012	e.g. P01012
Form Name	W01012B	e.g. W01012B
Version		e.g. ZJDE0001
MaxPageSize		e.g. 10
ReturnControlIDs		e.g. 1[19,20]58|62
FormInputs		e.g. (C,2);(D,3)
FormServiceAction	R	e.g. R
FindOnEntry	☐	Executes FIND on entry.
DemoMode	✓	Returns a dummy grid row.

✓ Generate for Mobile Applic... ✓ Preview JSON Data ✓ Keep JSON Files

6. In the AIS Client Class Generator, complete these fields to generate classes for the W01012B form in the P01012 application:
   - **Username**. Enter an EnterpriseOne username.
   - **Password**. Enter the EnterpriseOne password.
   - **Application Name**. Enter P01012.
   - **Form Name**. Enter W01012B.
7. Make sure the following check boxes are selected, and then click the **Generate** button.
   - **DemoMode**
   - **Generate for Mobile Application**

   The Preview JSON Data and Keep JSON Files check boxes are optional. If you select the Preview JSON Data check box, the JSON displays a preview of the JSON, as shown in the following example:

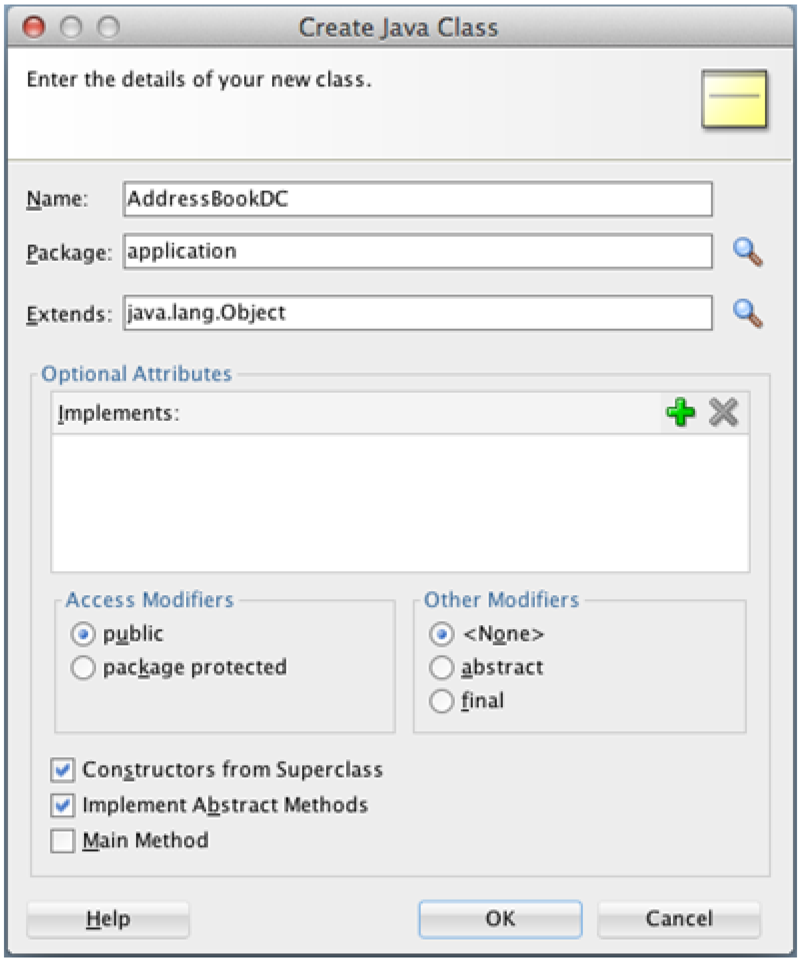


```
        "title" : "Long Address",
        "dataType" : 2
      },
      "sIndustryClass_49" : {
        "id" : 49,
        "editable" : true,
        "value" : "X",
        "internalValue" : "X",
        "title" : "Industry Class",
        "dataType" : 2
      },
      "sSchTyp_50" : {
        "id" : 50,
        "editable" : true,
        "value" : "X",
        "internalValue" : "X",
        "title" : "Sch Typ",
        "dataType" : 2
      },
      "sTaxID_51" : {
        "id" : 51,
        "editable" : true,
        "value" : "X",
        "internalValue" : "X",
        "title" : "Tax ID",
        "dataType" : 2
      }
    } ],
    "summary" : {
      "records" : 1,
      "moreRecords" : false
    }
   }
  },
  "errors" : [ ],
  "warnings" : [ ]
 },
 "stackId" : 1,
 "stateId" : 1,
 "rid" : "954daf3c2686eda6",
 "currentApp" : "P01012_W01012B",
 "sysErrors" : [ ]
}
```

8. On JSON Data Preview, make sure the preview shows at least one grid record, and then click **Continue**.
9. After receiving confirmation that the generation was a success, click **OK**.
10. In the Projects panel, click the "**refresh**" button so that the new classes appear in the ApplicationController tree.

To create a new Java class in the application package:

1. In the Projects panel, expand **ApplicationController > Application Sources**, right-click **application**, and then select **New > Java Class**.


Create Java Class

Enter the details of your new class.

Name: AddressBookDC

Package: application

Extends: java.lang.Object

Optional Attributes

Implements:

Access Modifiers: [✓ public] package protected

Other Modifiers: [✓ <None>] abstract final

[✓] Constructors from Superclass

[✓] Implement Abstract Methods

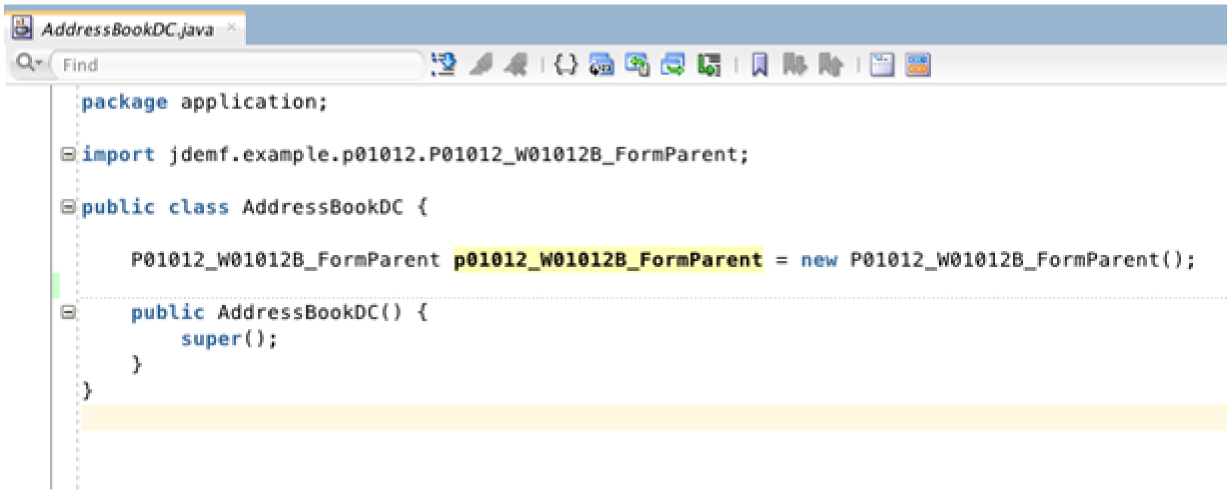
[ ] Main Method

2. On Create Java Class, enter AddressBookDC in the **Name** field and then click **OK**.

   This will be the main data control for the application.
3. Add a member to the AddressBookDC class of the P01012_W01012B_FormParent type. This will hold the data returned from the service call.

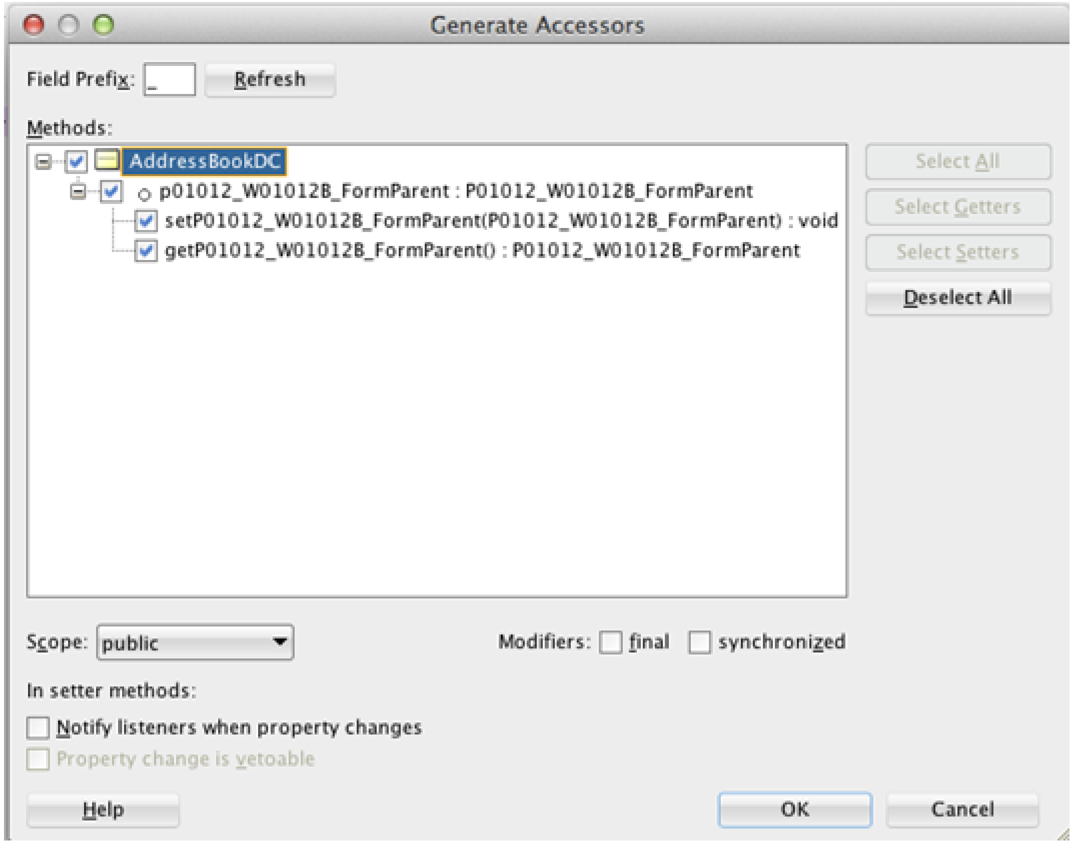
   The placement of the following code for the member is shown in the image that follows:

```
P01012_W01012B_FormParent p01012_W01012B_FormParent = new P01012_W01012B_FormParent();
```



```
package application;

import jdemf.example.p01012.P01012_W01012B_FormParent;

public class AddressBookDC {

    P01012_W01012B_FormParent p01012_W01012B_FormParent = new P01012_W01012B_FormParent();

    public AddressBookDC() {
        super();
    }
}
```

4. Right-click on the page and select **Generate Accessors** to generate accessors for the new member variable.


Generate Accessors
Field Prefix: _
Refresh
Methods:
AddressBookDC
p01012_W01012B_FormParent : P01012_W01012B_FormParent
setP01012_W01012B_FormParent(P01012_W01012B_FormParent) : void
getP01012_W01012B_FormParent() : P01012_W01012B_FormParent
Select All
Select Getters
Select Setters
Deselect All
Scope: public
Modifiers: final synchronized
In setter methods:
Notify listeners when property changes
Property change is vetoable
Help
OK
Cancel

5. On Generate Accessors, select the check box next to the **AddressBookDC** method and click **OK**.
6. Under Application Controller > Application Sources > application, right-click **AddressBookDC.java** and select **Create Data Control**.
7. On Choose Bean Class, accept the defaults and click **Next**.
8. On Bean Data Control Options, accept the defaults and click **Finish**.

   JDeveloper displays the new Data Control in the panel on the left.

To populate the data in the Data Control by calling the AIS service:

1. In the Projects panel, open the **AddressBookDC.java** class, and add the following code, which adds a new method to call the service and put the data in the member variable form parent:

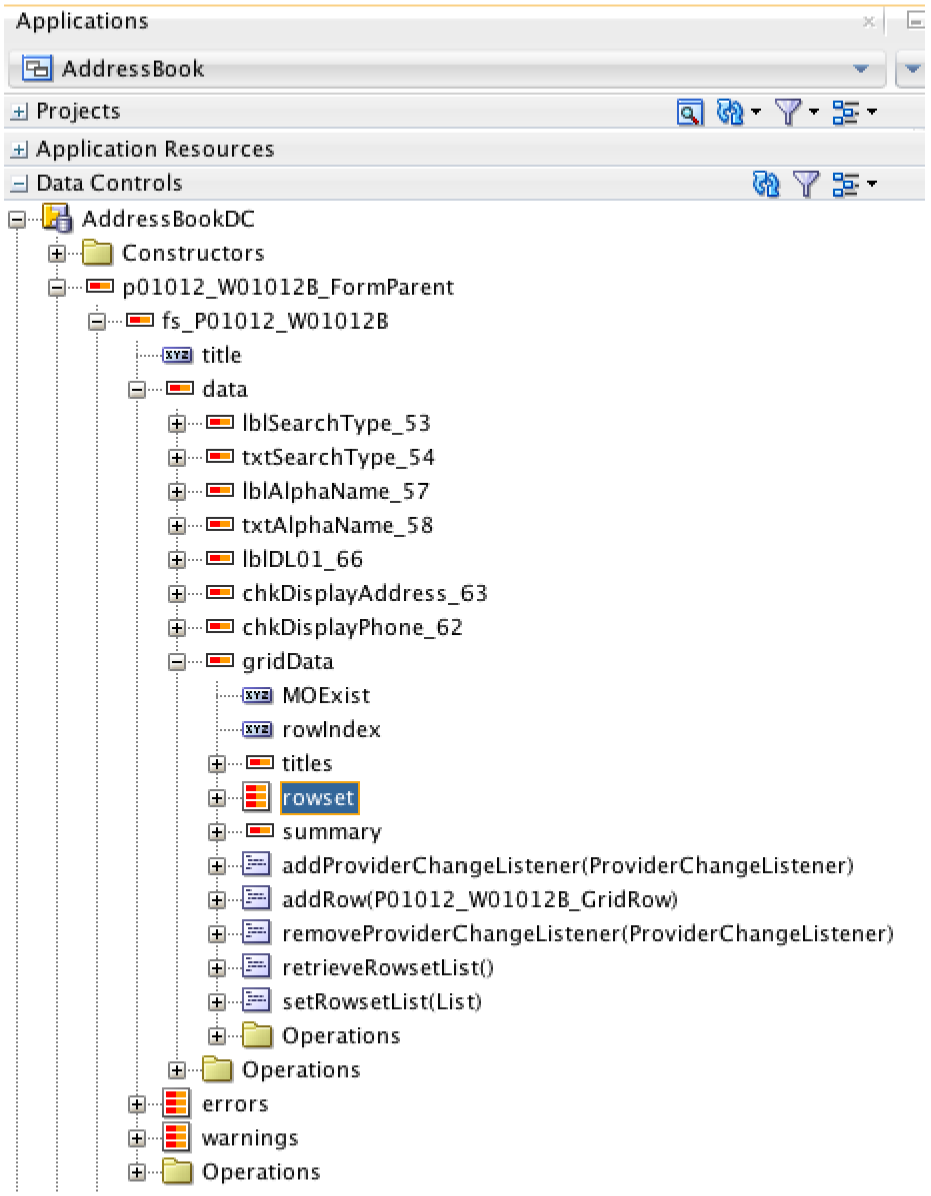
```
public void getAddressBookList(){

        FormRequest formRequest = new FormRequest();
        formRequest.setFormName("P01012_W01012B");
        formRequest.setVersion("ZJDE0001");
        formRequest.setFormServiceAction("R");

        FSREvent w01012BFSREvent = new FSREvent();
        w01012BFSREvent.setFieldValue("54","C"); //set search type to customer

        w01012BFSREvent.doControlAction("15");  // Trigger the Find Button
        formRequest.addFSREvent(w01012BFSREvent); //add the events to the form request


        try
        {
            //Serialize the form request to JSON String
            JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
            String postData = jsonObject.toString();

            // Call to JDERestServiceProvider with parameters JSON string
            String response = JDERestServiceProvider.jdeRestServiceCall(postData,
 JDERestServiceProvider.POST,JDERestServiceProvider.FORM_SERVICE_URI);

            //deserialize the response to the class for the W01012B form
            p01012_W01012B_FormParent =
 (P01012_W01012B_FormParent)JSONBeanSerializationHelper.fromJSON(P01012_W01012B_FormParent.class,
 response);


        }
        catch (JDERestServiceException e)
        {
            JDERestServiceProvider.handleServiceException(e);
        }
        catch(Exception e)
        {
            throw new AdfException(e.getMessage(), AdfException.ERROR);
        }
    }
```

2. Call this new method from the constructor (for now).

```
public AddressBookDC() {
          super();
          getAddressBookList();
}
```

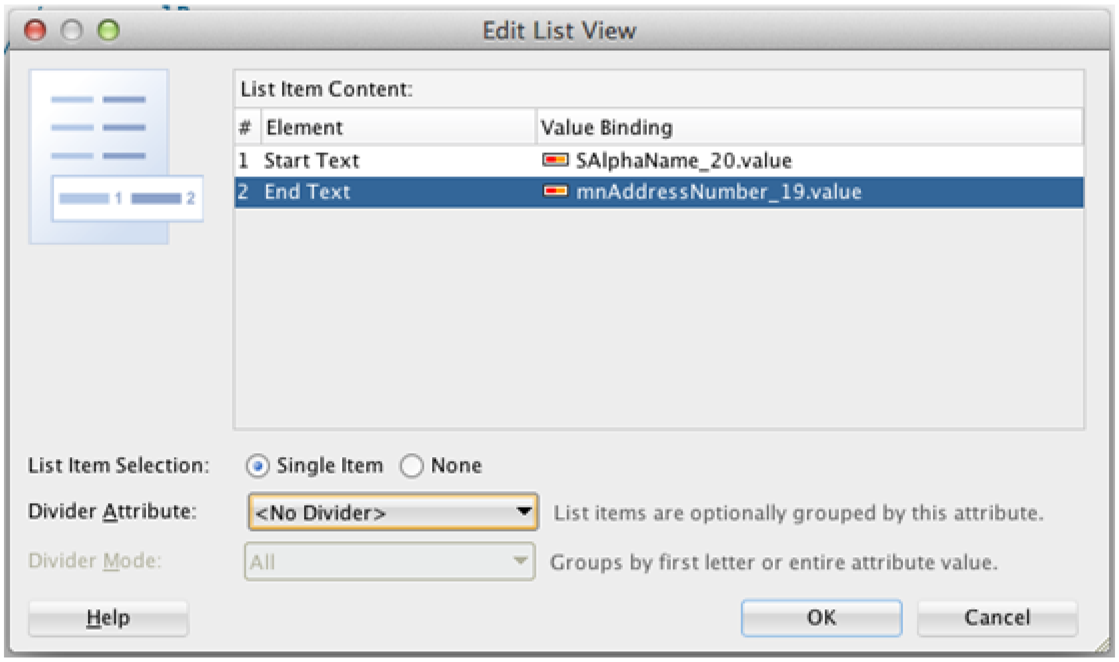
To create a UI to display the data:

1. Under ViewController > Web Content, open the **ablist.amx** page.



```
Applications
AddressBook
+ Projects
+ Application Resources
- Data Controls
- AddressBookDC
    + Constructors
    - p01012_W01012B_FormParent
        - fs_P01012_W01012B
            title
            - data
                + lblSearchType_53
                + txtSearchType_54
                + lblAlphaName_57
                + txtAlphaName_58
                + lblDL01_66
                + chkDisplayAddress_63
                + chkDisplayPhone_62
                - gridData
                    MOExist
                    rowIndex
                    + titles
                    + rowset
                    + summary
                    + addProviderChangeListener(ProviderChangeListener)
                    + addRow(P01012_W01012B_GridRow)
                    + removeProviderChangeListener(ProviderChangeListener)
                    + retrieveRowsetList()
                    + setRowsetList(List)
                    + Operations
                + Operations
            + errors
            + warnings
            + Operations
```

2. In the Data Controls panel, locate the rowset in the data control, which is located under **p01012_W01012B_FormParent > fs_P01012_W01012B > data > gridData**.
3. Drag the **rowset** to the ablist.amx page after the `</amx:facet>` end tag.
4. Select **MAF List View**, and in the ListView Gallery, select the **Start-End** type of the list view.



List Item Content:

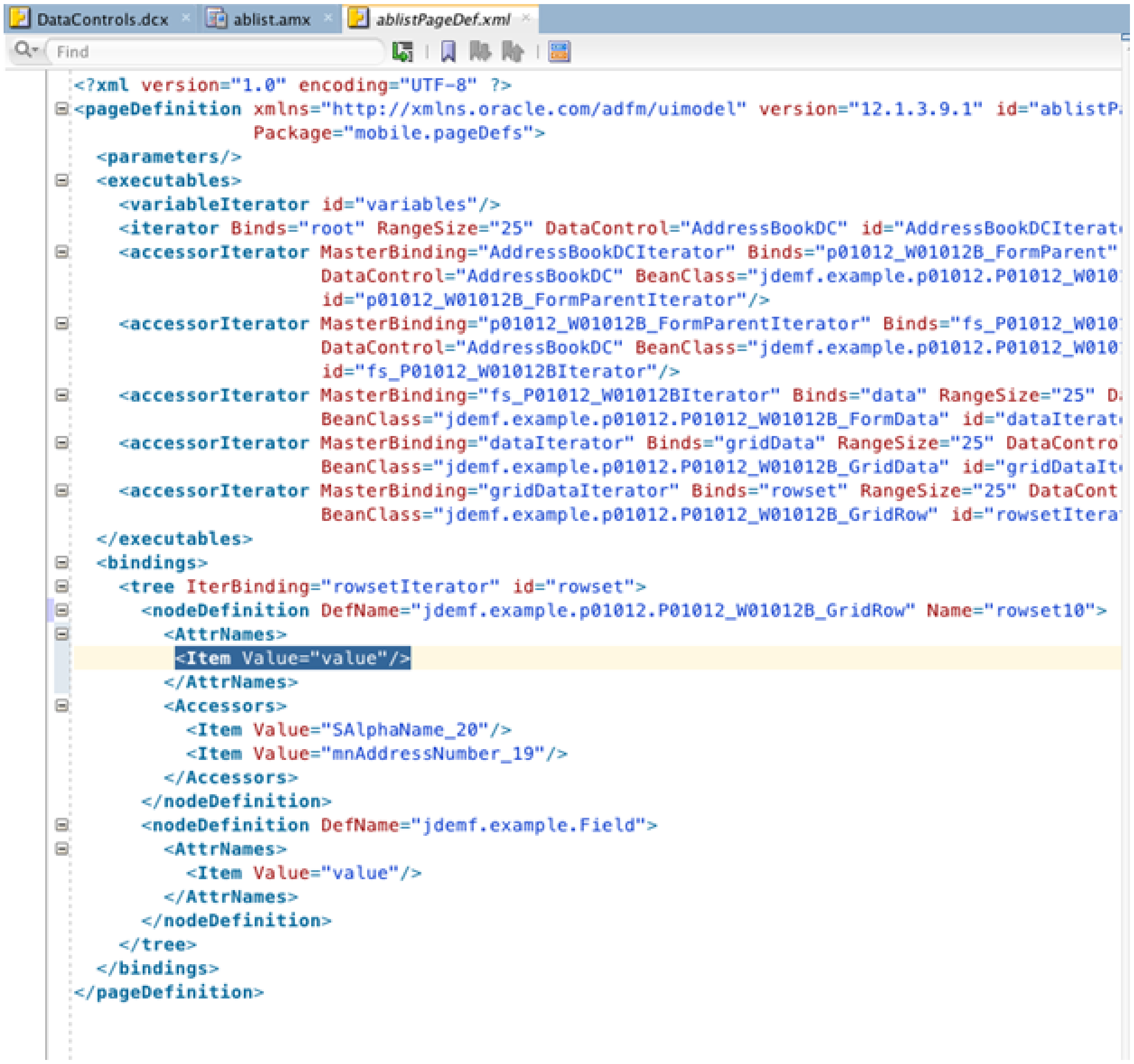
#	Element	Value Binding
1	Start Text	SAlphaName_20.value
2	End Text	mnAddressNumber_19.value

List Item Selection: [✓ Single Item] None

Divider Attribute: <No Divider> List items are optionally grouped by this attribute.

Divider Mode: All Groups by first letter or entire attribute value.

5. For the Start Text, select **SAlphaName_20.value**, and for the End Text, select **mnAddressNumber_19.value**.
6. Click **OK**.
7. Locate the **amx:cellFormat** element and change the cell format that contains the alpha name to 80%. Change the cell format that contains the address number to 20%. See *Figure 3: Example of setting page navigation action* for an example.
8. In the Projects panel, expand **ViewController > Application Sources > mobile.pageDefs**, open the **ablistPageDef.xml**, and select the Source tab.



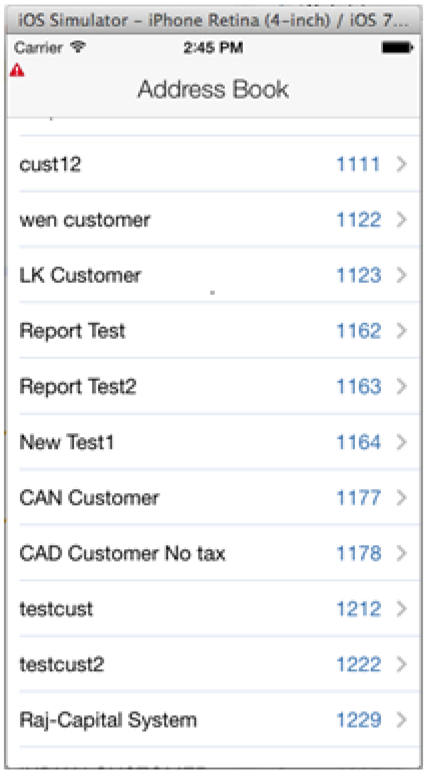
```
<?xml version="1.0" encoding="UTF-8" ?>
<pageDefinition xmlns="http://xmlns.oracle.com/adfm/uimodel" version="12.1.3.9.1" id="ablistP
                Package="mobile.pageDefs">
  <parameters/>
  <executables>
    <variableIterator id="variables"/>
    <iterator Binds="root" RangeSize="25" DataControl="AddressBookDC" id="AddressBookDCIterat
    <accessorIterator MasterBinding="AddressBookDCIterator" Binds="p01012_W01012B_FormParent"
                      DataControl="AddressBookDC" BeanClass="jdemf.example.p01012.P01012_W010
                      id="p01012_W01012B_FormParentIterator"/>
    <accessorIterator MasterBinding="p01012_W01012B_FormParentIterator" Binds="fs_P01012_W010
                      DataControl="AddressBookDC" BeanClass="jdemf.example.p01012.P01012_W010
                      id="fs_P01012_W01012BIterator"/>
    <accessorIterator MasterBinding="fs_P01012_W01012BIterator" Binds="data" RangeSize="25" D
                      BeanClass="jdemf.example.p01012.P01012_W01012B_FormData" id="dataIterat
    <accessorIterator MasterBinding="dataIterator" Binds="gridData" RangeSize="25" DataContro
                      BeanClass="jdemf.example.p01012.P01012_W01012B_GridData" id="gridDataIt
    <accessorIterator MasterBinding="gridDataIterator" Binds="rowset" RangeSize="25" DataCont
                      BeanClass="jdemf.example.p01012.P01012_W01012B_GridRow" id="rowsetItera
  </executables>
  <bindings>
    <tree IterBinding="rowsetIterator" id="rowset">
      <nodeDefinition DefName="jdemf.example.p01012.P01012_W01012B_GridRow" Name="rowset10">
        <AttrNames>
          <Item Value="value"/>
        </AttrNames>
        <Accessors>
          <Item Value="SAlphaName_20"/>
          <Item Value="mnAddressNumber_19"/>
        </Accessors>
      </nodeDefinition>
      <nodeDefinition DefName="jdemf.example.Field">
        <AttrNames>
          <Item Value="value"/>
        </AttrNames>
      </nodeDefinition>
    </tree>
  </bindings>
</pageDefinition>
```

9. In the **<AttrName>** element, add the following line of code:

```
<Item Value="value"/>
```

10. Deploy and run the application.

    After logging in, it should automatically populate the list with customer names as shown in the following example:


iOS Simulator – iPhone Retina (4-inch) / iOS 7...

Carrier 2:45 PM

Address Book

cust12	1111
wen customer	1122
LK Customer	1123
Report Test	1162
Report Test2	1163
New Test1	1164
CAN Customer	1177
CAD Customer No tax	1178
testcust	1212
testcust2	1222
Raj-Capital System	1229

Implementing Filter Fields

Implement a Name (string) filter. To do so:

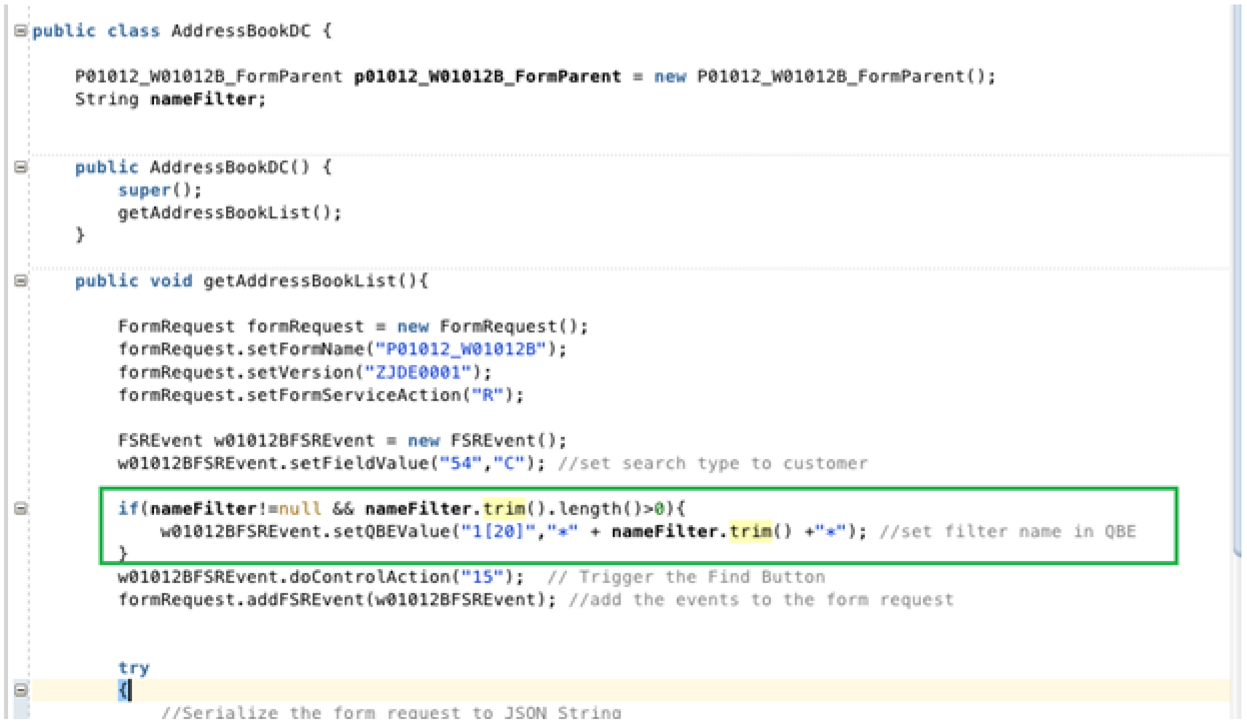
1. Select the **AddressBookDC.java** tab, and add the following code to add a member variable:

```
String nameFilter;
```

2. Right-click on the page and select **Generate Accessors**.
3. Add the following code to the getAddressBookList() method to use the new filter value:

```
if(nameFilter!=null && nameFilter.trim().length()>0){
//set filter name in QBE
       w01012BFSREvent.setQBEValue("1[20]","*" + nameFilter.trim() +"*");
}
```

   The following example shows the code in the method:

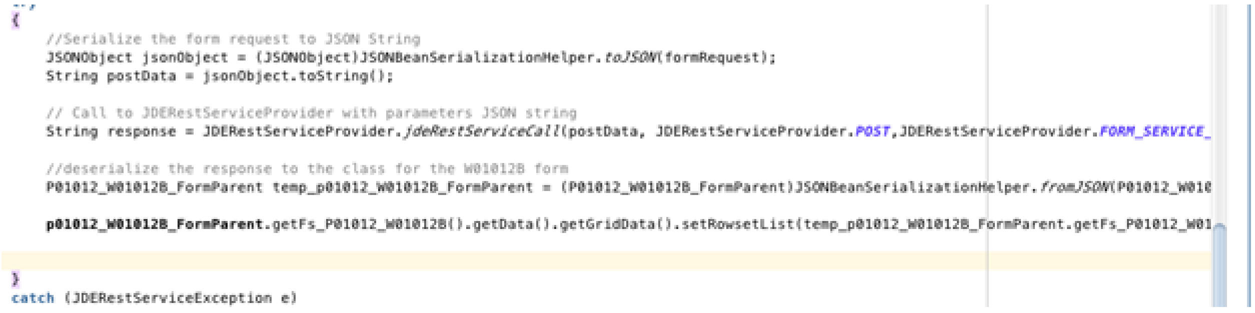


```
public class AddressBookDC {

    P01012_W01012B_FormParent p01012_W01012B_FormParent = new P01012_W01012B_FormParent();
    String nameFilter;


    public AddressBookDC() {
        super();
        getAddressBookList();
    }

    public void getAddressBookList(){

        FormRequest formRequest = new FormRequest();
        formRequest.setFormName("P01012_W01012B");
        formRequest.setVersion("ZJDE0001");
        formRequest.setFormServiceAction("R");

        FSREvent w01012BFSREvent = new FSREvent();
        w01012BFSREvent.setFieldValue("54","C"); //set search type to customer

        if(nameFilter!=null && nameFilter.trim().length()>0){
            w01012BFSREvent.setQBEValue("1[20]","*" + nameFilter.trim() +"*"); //set filter name in QBE
        }
        w01012BFSREvent.doControlAction("15");  // Trigger the Find Button
        formRequest.addFSREvent(w01012BFSREvent); //add the events to the form request


        try
        {
            //Serialize the form request to JSON String
```

4. Remove the call to getAddressBookList() in the constructor. Later in these steps, you will call this method from the search button instead.
5. Change the code after the response is retrieved. This will enable the data to refresh after a new search is performed.

```
//deserialize the response to the class for the W01012B form
            P01012_W01012B_FormParent temp_p01012_W01012B_FormParent =
 (P01012_W01012B_FormParent)JSONBeanSerializationHelper.fromJSON(P01012_W01012B_FormParent.class,
 response);

            p01012_W01012B_FormParent.getFs_P01012_W01012B().getData().getGridData().setRowsetWithList

 (temp_p01012_W01012B_FormParent.getFs_P01012_W01012B().getData().getGridData().retrieveRowsetList());
```

The following example shows the code:



```
{
    //Serialize the form request to JSON String
    JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
    String postData = jsonObject.toString();

    // Call to JDERestServiceProvider with parameters JSON string
    String response = JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST,JDERestServiceProvider.FORM_SERVICE_

    //deserialize the response to the class for the W01012B form
    P01012_W01012B_FormParent temp_p01012_W01012B_FormParent = (P01012_W01012B_FormParent)JSONBeanSerializationHelper.fromJSON(P01012_W010

    p01012_W01012B_FormParent.getFs_P01012_W01012B().getData().getGridData().setRowsetList(temp_p01012_W01012B_FormParent.getFs_P01012_W01

}
catch (JDERestServiceException e)
```

6. Under **ViewController > Web Content**, open **ablist.amx**.
7. In the Data Controls panel, expand **AddressBookDC** and locate the new nameFilter field.
8. Drag the **nameFilter** to the amx page before the start of the list view and after the end of the secondary facet.
9. On the context menu, select **Text > MAF Input Text w/Label**.
10. Change the label to:

```
label= "Name"
```

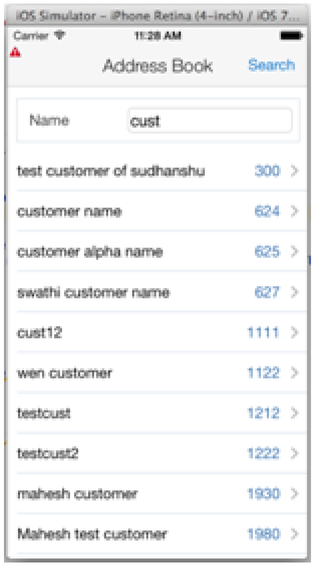
11. Remove the existing button in the secondary facet.
12. In the Data Controls panel, locate the **getAddressBookList()** method in the AddressBookDC data control.
13. Drag the method inside the secondary facet in the amx page, and click **MAF Button** in the context menu to create a button.
14. To name the new button, change the text attribute to:

    ```
    text="Search"
    ```

15. Add a panelFormLayout around the name input field, which will delineate it from the list with a box, as shown in the following example:

    ```
    <amx:panelFormLayout labelPosition="start" fieldHalign="start">
        <amx:inputText value="#{bindings.nameFilter.inputValue}" label="Name" id="it1"/
    >
    </amx:panelFormLayout>
    ```

16. Deploy the application and perform a search by entering a value in the Name field, which should return matching results, as shown here:



test customer of sudhanshu	300
customer name	624
customer alpha name	625
swathi customer name	627
cust12	1111
wen customer	1122
testcust	1212
testcust2	1222
mahesh customer	1930
Mahesh test customer	1980

Page Navigation and Getting More Details

This section describes how to generate classes that enable the mobile application to retrieve additional details from the Address Book application.

To generate the classes that will hold the additional details:

1. Select the **Tools** menu, **AIS Client Class Generator** to launch the AIS Client Class Generator.

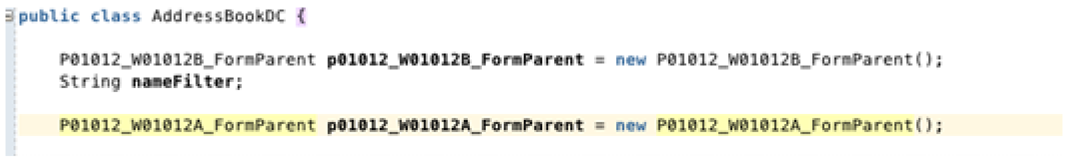
   By default, the AIS Client Class Generator should display the values and options that you entered previously.

   This time, you need to request the following five fields from the W01012A form in EnterpriseOne, which you specify in the ReturnControlIDs field in the generator:

   AlphaName(28), AddressLine1(40), City(52), State(54), PostalCode(50)

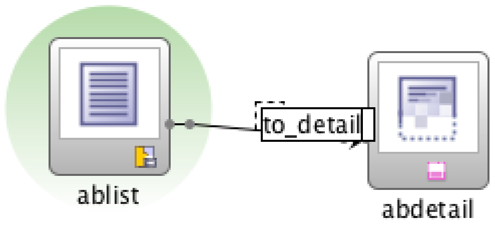
2. To generate classes, complete these fields and click the **Generate** button:
   - **Application Name**: P01012
   - **Form Name**: W01012A
   - **ReturnControlIDs**: 28|40|52|54|50
   - **Demo Mode**: Checked

   JDeveloper displays the generated classes in the Projects panel, under **ApplicationController > Application Sources >** *application* node.
3. Create a member variable in the AddressBookDC class, as shown in the following example:



```
public class AddressBookDC {

    P01012_W01012B_FormParent p01012_W01012B_FormParent = new P01012_W01012B_FormParent();
    String nameFilter;

    P01012_W01012A_FormParent p01012_W01012A_FormParent = new P01012_W01012A_FormParent();
```

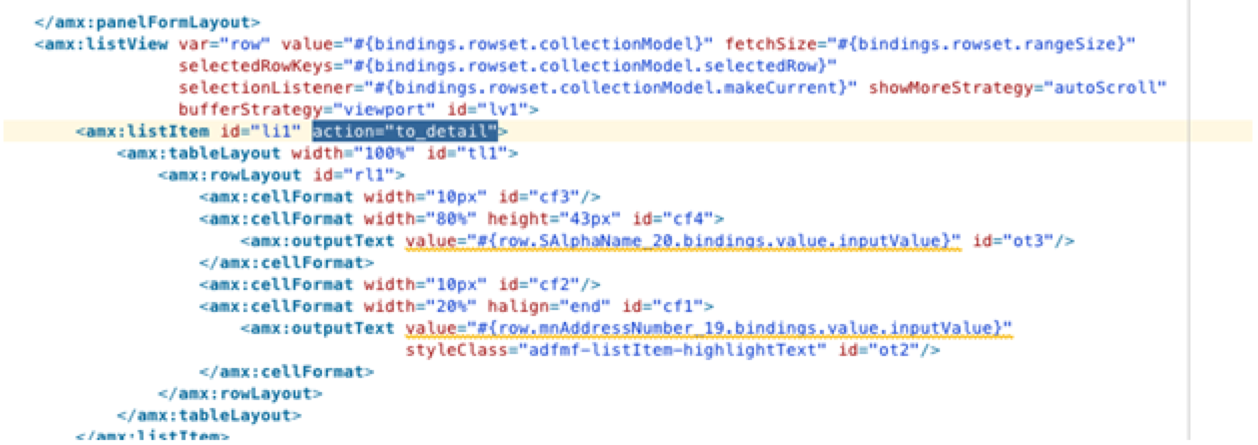
4. Right-click and select **Generate Accessors**.
5. On Generate Accessors, select the check box next to **AddressBookDC** and click **OK**.
6. Under the **ViewController > Web Content > ABList**, open the **ViewController-task-flow.xml**.
7. To add another view to the task flow, in the Components window, drag View onto the page.
8. Enter abdetail for the view name.
9. Add a control flow by dragging it from the Components and extending it from ablist icon to the abdetail icon.



10. Enter to_detail for the name.
11. Double-click the **abdetail** view to generate the amx. You can use the default values on the Create MAF AMX Page dialog box.
12. In the abdetail.amx page, enter the following code to configure a back button:

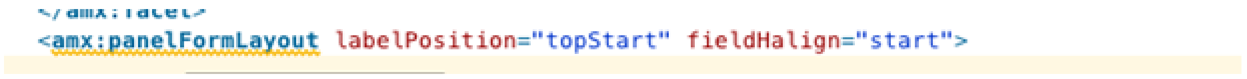
```
<amx:facet name="primary">
  <amx:commandButton id="cb1" action="__back" text="Back"/>
</amx:facet>
```

13. Open the **ablist.amx** page and set the action for a list item to use the "to_detail" navigation, as shown in the following example:



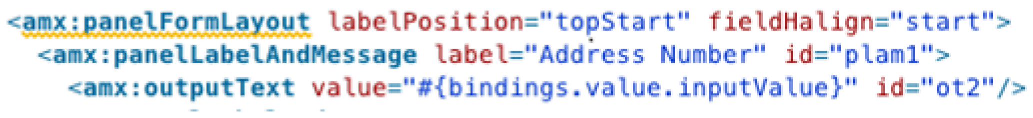
```
</amx:panelFormLayout>
<amx:listView var="row" value="#{bindings.rowset.collectionModel}" fetchSize="#{bindings.rowset.rangeSize}"
              selectedRowKeys="#{bindings.rowset.collectionModel.selectedRow}"
              selectionListener="#{bindings.rowset.collectionModel.makeCurrent}" showMoreStrategy="autoScroll"
              bufferStrategy="viewport" id="lv1">
    <amx:listItem id="li1" action="to_detail">
        <amx:tableLayout width="100%" id="tl1">
            <amx:rowLayout id="rl1">
                <amx:cellFormat width="10px" id="cf3"/>
                <amx:cellFormat width="80%" height="43px" id="cf4">
                    <amx:outputText value="#{row.SAlphaName_20.bindings.value.inputValue}" id="ot3"/>
                </amx:cellFormat>
                <amx:cellFormat width="10px" id="cf2"/>
                <amx:cellFormat width="20%" halign="end" id="cf1">
                    <amx:outputText value="#{row.mnAddressNumber_19.bindings.value.inputValue}"
                                    styleClass="adfmf-listItem-highlightText" id="ot2"/>
                </amx:cellFormat>
            </amx:rowLayout>
        </amx:tableLayout>
    </amx:listItem>
```

14. Return to the **abdetil.amx** file and create a panelFormLayout after the last facet, as shown in the following example:



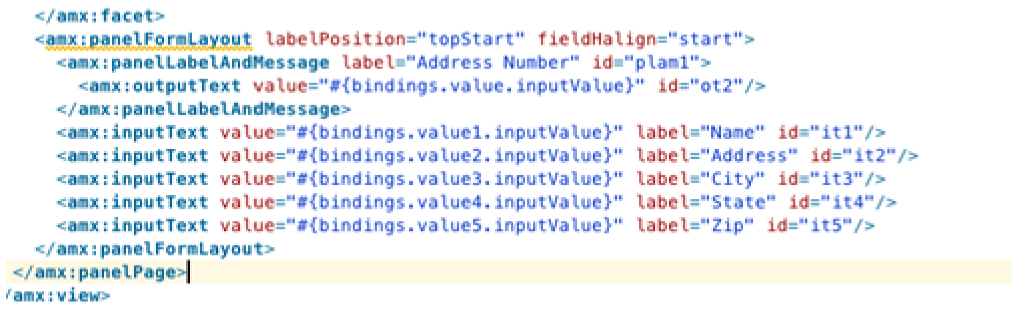
```
</amx:facet>
<amx:panelFormLayout labelPosition="topStart" fieldHalign="start">
```

15. In the Data Controls panel, locate the address number value within the W0102B form, which is located under **AddressBookDC > p01012_W01012B_FormParent > fs_P01012_W01012B > data > gridData > rowset > mnAddressNumber_19**.
16. Drag the **value** field under mnAddressNumber_19 to the page inside the panelFormLayout, and in the context menu, select **Text > MAF Output Text w/Label**.
17. Change the label to "Address Number" as shown in the following example:



```
<amx:panelFormLayout labelPosition="topStart" fieldHalign="start">
  <amx:panelLabelAndMessage label="Address Number" id="plam1">
    <amx:outputText value="#{bindings.value.inputValue}" id="ot2"/>
```

18. Locate the data area of the W01012A form, which is under **AddressBookDC > p01012_W01012A_FormParent > fs_P01012_W01012A > data**.
19. Drag the **value** that is within the txtAlphaName_28 data element of the AlphaName to the page after the panelLabelAndMessage for AddressNumber.
20. In the context menu, select T**ext > MAF Input Text w/Label**.
21. Repeat for the other detail fields, and set the labels with their names, as shown in the following example:



```
</amx:facet>
<amx:panelFormLayout labelPosition="topStart" fieldHalign="start">
  <amx:panelLabelAndMessage label="Address Number" id="plam1">
    <amx:outputText value="#{bindings.value.inputValue}" id="ot2"/>
  </amx:panelLabelAndMessage>
  <amx:inputText value="#{bindings.value1.inputValue}" label="Name" id="it1"/>
  <amx:inputText value="#{bindings.value2.inputValue}" label="Address" id="it2"/>
  <amx:inputText value="#{bindings.value3.inputValue}" label="City" id="it3"/>
  <amx:inputText value="#{bindings.value4.inputValue}" label="State" id="it4"/>
  <amx:inputText value="#{bindings.value5.inputValue}" label="Zip" id="it5"/>
</amx:panelFormLayout>
</amx:panelPage>
/amx:view>
```

22. Open the **AddressBookDC.java** and create this new method:

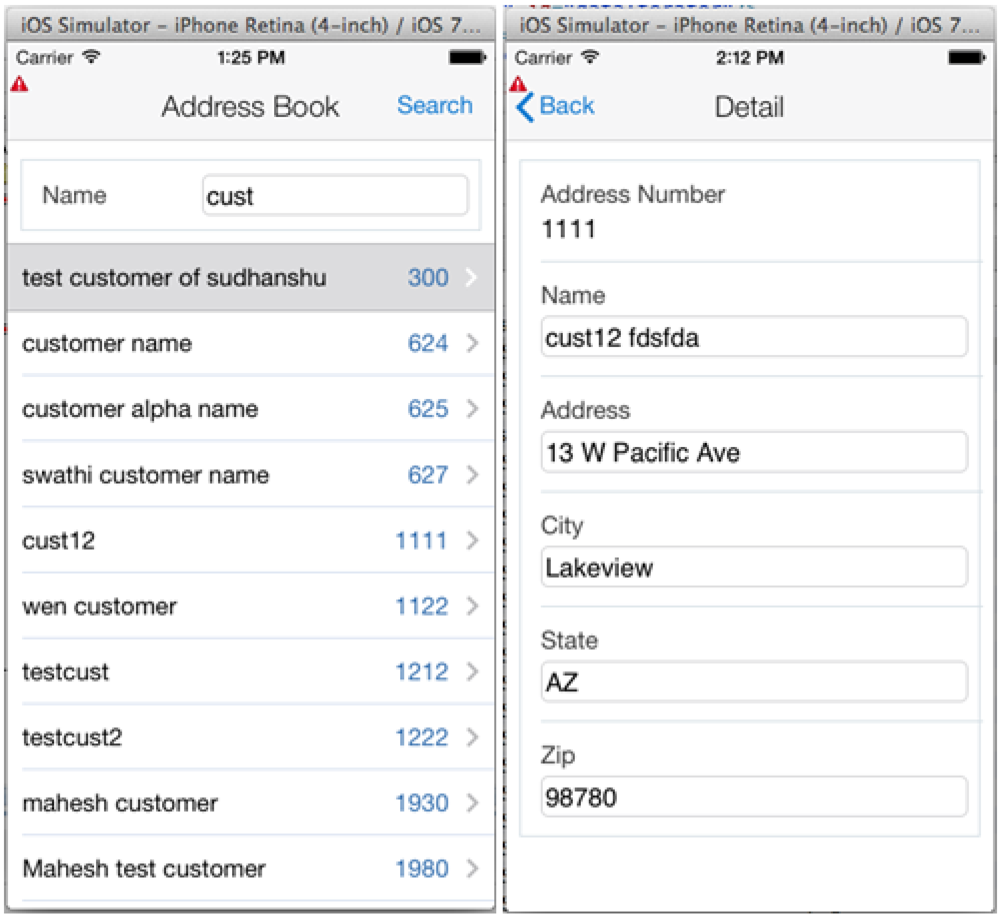
```
public void getAddressBookDetail(String addressNumber) {
        FormRequest formRequest = new FormRequest();
        formRequest.setFormName("P01012_W01012A");
```

```
            formRequest.setVersion("ZJDE0001");
            formRequest.setFormServiceAction("R");
            formRequest.addToFISet("12", addressNumber);

            try {
                //Serialize the form request to JSON String
                JSONObject jsonObject = (JSONObject)
    JSONBeanSerializationHelper.toJSON(formRequest);
                String postData = jsonObject.toString();

                // Call to JDERestServiceProvider with parameters JSON string
                String response =
                    JDERestServiceProvider.jdeRestServiceCall(postData,
    JDERestServiceProvider.POST,

    JDERestServiceProvider.FORM_SERVICE_URI);

                //deserialize the response to the class for the W01012A form
                 p01012_W01012A_FormParent =
                    (P01012_W01012A_FormParent)
    JSONBeanSerializationHelper.fromJSON(P01012_W01012A_FormParent.class,

    response);


            } catch (JDERestServiceException e) {
                JDERestServiceProvider.handleServiceException(e);
            } catch (Exception e) {
                throw new AdfException(e.getMessage(), AdfException.ERROR);
            }
        }
```

23. Configure the application so that the method is called when the user loads the detail page.
    a. Open the **abdetail.amx** and use the tabs at the bottom to open the Bindings.
    b. Click the **green plus sign** to add a binding to the Bindings column.
    c. On Insert Item, add a methodAction.
    d. Select the **getAddressBookDetails(String)** method, and enter the following value for the input. This is the value of the mnAddressNumber_19 field.

       ```
       #{bindings.value.inputValue}
       ```
    e. In the Executables column, click the **Add** icon.
    f. On Insert Item, select **invokeAction** and click **OK**.
    g. On Insert invokeAction, enter getDetails for the **id**.
    h. Select the **getAddressBookDetail** method and then click **OK**.
    i. In the Executables page, select the **getDetails** action and drag it up in the list, directly after mnAddressNumber_19Iterator.
    j. Highlight **getDetails**, click the **Pencil** icon, and set Refresh to "always."
    k. Click **OK** and then test the application in the simulator.

If successful, the simulator displays the Address Book details when you select a record, as shown in the following illustration:



iOS Simulator – iPhone Retina (4-inch) / iOS 7...
Carrier 1:25 PM
Address Book Search

Name cust

test customer of sudhanshu	300
customer name	624
customer alpha name	625
swathi customer name	627
cust12	1111
wen customer	1122
testcust	1212
testcust2	1222
mahesh customer	1930
Mahesh test customer	1980

iOS Simulator – iPhone Retina (4-inch) / iOS 7...
Carrier 2:12 PM
Back Detail

Address Number
1111

Name
cust12 fdsfda

Address
13 W Pacific Ave

City
Lakeview

State
AZ

Zip
98780

Updating Data in EnterpriseOne

Next, use the details form to update the values in the database.

To update the values:

1. In the AddressBookDC class, add the following new method to update the values:

```
public void updateAddressBookDetail(String addressNumber) {
           FormRequest formRequest = new FormRequest();
           formRequest.setFormName("P01012_W01012A");
           formRequest.setVersion("ZJDE0001");
           formRequest.setFormServiceAction("U");
           formRequest.addToFISet("12", addressNumber);

           FSREvent w01012AUpdateFSREvent = new FSREvent();//set all the field values
           w01012AUpdateFSREvent.setFieldValue("28",
 p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtAlphaName_28().getValue());
           w01012AUpdateFSREvent.setFieldValue

 ("40",p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtAddressLine1_40().getValue() );
           w01012AUpdateFSREvent.setFieldValue

 ("52",p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtCity_52().getValue() );
           w01012AUpdateFSREvent.setFieldValue("54",
 p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtState_54().getValue());
```

```
            w01012AUpdateFSREvent.setFieldValue("50",
  p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtPostalCode_50().getValue());


            w01012AUpdateFSREvent.doControlAction("11"); // Trigger the OK Button
            formRequest.addFSREvent(w01012AUpdateFSREvent); //add the events to the form request


            try {
                //Serialize the form request to JSON String
                JSONObject jsonObject = (JSONObject) JSONBeanSerializationHelper.toJSON(formRequest);
                String postData = jsonObject.toString();

                // Call to JDERestServiceProvider with parameters JSON string
                String response =
                    JDERestServiceProvider.jdeRestServiceCall(postData, JDERestServiceProvider.POST,
                                                              JDERestServiceProvider.FORM_SERVICE_URI);


                //after the call navigate back to the list page
  AdfmfContainerUtilities.invokeContainerJavaScriptFunction("ABList", "adf.mf.api.amx.doNavigation", new
  Object[]{"__back"});


            } catch (JDERestServiceException e) {
                JDERestServiceProvider.handleServiceException(e);
            } catch (Exception e) {
                throw new AdfException(e.getMessage(), AdfException.ERROR);
            }
        }
```

2. Open the **abdetail.amx** page.
3. Select the **updateAddressbookDetail(String)** method from the data control.
4. Drag it between the secondary facet (remove the existing button first).
5. On Edit Action Binding, set the parameter value to: **#{bindings.value.inputValue}**

   This is the binding value that corresponds to the address number.
6. Run the application in the simulator to test the following actions:

   a. Change the values.
   b. Click **Save**.
   c. Search on a new name.

Handling Errors

Some of the fields may potentially have errors such as an invalid state code. This section describes how to handle those errors.

1. Add the following items to the AddressBookDC class:

   - An error array member variable.
   - A property change support member variable.
   - A provider change member variable.
   - Setters and getters.
   - Provider change support methods.

   This code also provides a getter for an errorCount, which is set when the array is set using the property change listener, as shown in the following code sample:

```
FormErrorWarningMobile[] errors;
     private PropertyChangeSupport propertyChangeSupport = new
 PropertyChangeSupport(this);
```

```
        protected transient ProviderChangeSupport errorChangeSupport = new
     ProviderChangeSupport(this);

    public void addProviderChangeListener(ProviderChangeListener l)
        {
            errorChangeSupport.addProviderChangeListener(l);
        }

        public void removeProviderChangeListener(ProviderChangeListener l)
        {
            errorChangeSupport.removeProviderChangeListener(l);
        }

        public void setErrors(FormErrorWarningMobile[] errors) {
            int oldCount = 0;
            if(this.errors!=null){
                oldCount = this.errors.length;
            }
            int newCount = 0;
            if(errors != null){
                newCount = errors.length;
            }
            this.errors = errors;
            errorChangeSupport.fireProviderRefresh("errors");
            propertyChangeSupport.firePropertyChange("errorCount", oldCount,newCount);
        }

        public FormErrorWarningMobile[] getErrors() {
            return errors;
        }

       public int getErrorCount()
        {
            if(errors != null){
                return errors.length;
            }else{
                return 0;
            }

        }

        public void addPropertyChangeListener(PropertyChangeListener l) {
            propertyChangeSupport.addPropertyChangeListener(l);
        }

        public void removePropertyChangeListener(PropertyChangeListener l) {
            propertyChangeSupport.removePropertyChangeListener(l);
        }
```

2. Modify the code in the updateAddressBookDetail method of the AddressBookDC class. Instead of always navigating back to the list first, check the errors and then return to the list.

   Replace this line:

```
               //after the call navigate back to the list page
 AdfmfContainerUtilities.invokeContainerJavaScriptFunction("ABList",
 "adf.mf.api.amx.doNavigation", new Object[]{"__back"});
```

   With this code:

```
//deserialize the response to the class for the W01012A form
```

```
                  P01012_W01012A_FormParent temp_p01012_W01012A_FormParent =
                     (P01012_W01012A_FormParent)
 JSONBeanSerializationHelper.fromJSON(P01012_W01012A_FormParent.class, 

 response);

                 clearErrors();

 if(temp_p01012_W01012A_FormParent.getFs_P01012_W01012A().getErrors() != null
                 &&
 temp_p01012_W01012A_FormParent.getFs_P01012_W01012A().getErrors().length > 0
                 ){

                     //set error list
setErrors(temp_p01012_W01012A_FormParent.getFs_P01012_W01012A().getErrors());
                 }else{

                     //no errors navigate back
AdfmfContainerUtilities.invokeContainerJavaScriptFunction("ABList",
 "adf.mf.api.amx.doNavigation", new Object[]{"__back"});
                 }
  public void clearErrors(){
        setErrors(null);
    }
```

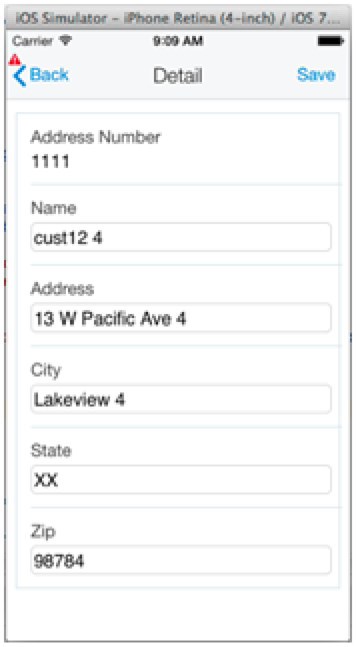
3. Open **abdetail.amx**.
4. In the Data Controls panel, select **errors** under AddressBookDC and drag it to the page, placing it after the last facet to create a list view.
5. On the context menu, select **MAF List View**.
6. On ListView Gallery, select the default view.
7. On Edit List View, select **MOBILE** from the Text drop-down menu and click **OK**.
8. In the Data Control panel, locate the **errorCount** under AddressBookDC.
9. Drag **errorCount** onto the page and in the context menu, select **Text > MAF Output Text**.
10. Remove the list view and output text that you previously added; they were just added to create bindings.
11. After the last facet, insert the following list view code:

```
<amx:listView var="row" value="#{bindings.errors.collectionModel}"
 fetchSize="#{bindings.errors.rangeSize}"
                      styleClass="adfmf-listView-insetList" id="lv1"
 rendered="#{bindings.errorCount.inputValue gt 0}">
            <amx:listItem showLinkIcon="false" id="li1">
            <amx:panelGroupLayout>
                            <amx:inputText rows="3" value="#{row.MOBILE}" id="ot3"
 inlineStyle="color:Red;word-wrap:break-word;"
                                             readOnly="true"/>
                <amx:panelGroupLayout>
            </amx:listItem>
        </amx:listView>
```

12. Run the application in the simulator and test the following tasks in the application:

    a. Enter an invalid state code.
    b. Click **Save**.

    The simulator should display the "not found" error as shown in the following example:



Address Number
1111

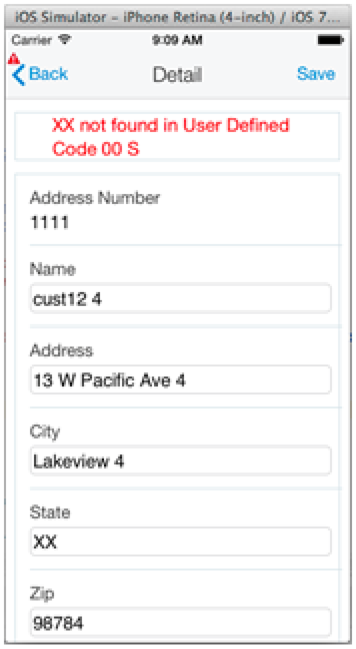
Name
cust12 4

Address
13 W Pacific Ave 4

City
Lakeview 4

State
XX

Zip
98784



XX not found in User Defined Code 00 S

Address Number
1111

Name
cust12 4

Address
13 W Pacific Ave 4

City
Lakeview 4

State
XX

Zip
98784

If you correct it with a valid value and click **Save**, the application will successfully save the record.

Device Integration

This example shows how to enable the mobile application user to add a record they are viewing to the contacts list on the device. To do so:

1. Open the **maf-application.xml** and select the **Plugins** tab.
2. Select the check box next to **Contacts** to enable access to the Contacts on the device.
3. Add a member variable to the AddressBookDC.java class to hold the confirmation message.
4. Generate accessors with property change support.

   After defining the member variable and generating accessors, the resulting code should look like this:

```
private String addContactResultMsg = null;

    public String getAddContactResultMsg() {
        return addContactResultMsg;
    }

 public void setAddContactResultMsg(String addContactResultMsg) {
        String oldAddContactResultMsg = this.addContactResultMsg;
        this.addContactResultMsg = addContactResultMsg;
        propertyChangeSupport.firePropertyChange("addContactResultMsg",
 oldAddContactResultMsg, addContactResultMsg);
    }
```

5. Add the following new method, which enables the record to be added to the device's contacts list:

```
public void createDeviceContact() {
        String resultMessage = "Contact Exists";

        // Call FindContacts to determine if the contact already exists on device.
        String contactSearchName =
            p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtAlphaName_28().getValue();
        try {
            Contact[] foundContacts =
                DeviceManagerFactory.getDeviceManager().findContacts("name", contactSearchName, true);

            if (foundContacts != null && foundContacts.length == 0) {
                Contact newContact = new Contact();

                // Assign contact name.
                ContactName name = new ContactName();
                name.setFormatted(contactSearchName);
                name.setGivenName(contactSearchName);
                newContact.setName(name);

                // Assign  address to contact.
                ContactAddresses[] addresses = new ContactAddresses[1];
                ContactAddresses address = new ContactAddresses();

 address.setStreetAddress(p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtAddressLine1_40().getValue());

 address.setLocality(p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtCity_52().getValue());

 address.setPostalCode(p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtPostalCode_50().getValue());

 address.setRegion(p01012_W01012A_FormParent.getFs_P01012_W01012A().getData().getTxtState_54().getValue());
                addresses[0] = address;
                newContact.setAddresses(addresses);

                try {
                    // Add contact to device.
                    DeviceManagerFactory.getDeviceManager().createContact(newContact);

                    // Device contact now exists.
                    resultMessage = "Contact Added";

                } catch (Exception e) {
                    throw new AdfException(e.getMessage(), AdfException.ERROR);
                }
            }
        } catch (Exception e) {
            // Unable to interact with device's contact list - display error.
            resultMessage = "Unable to Add Contact";

        }

        setAddContactResultMsg(resultMessage);
    }
```

6. Open the **abdetail.amx** page and locate the new method called createDeviceContact under the AddressBookDC data control.
7. Drag the method to the page as a button, and then delete the button.

   This creates the bindings.
8. Locate the addContactResultMsg under the AddressBookDC data control.
9. Drag it to the page as an output text, and then delete the output text.

   This creates the bindings.
10. Enter the following code for the footer after the end of the panel form layout (`</amx:panelFormLayout>`):

```
<amx:facet name="footer">
            <amx:panelGroupLayout id="pgl6" layout="horizontal" halign="end">
                <!-- Add Contact To Device-->
                <amx:commandButton
 actionListener="#{bindings.createDeviceContact.execute}" text="Create Device
 Contact"
                                  disabled="#{!
bindings.createDeviceContact.enabled}" id="cb4">
                    <amx:showPopupBehavior id="spb1" popupId="p1"
 align="overlapTopCenter" alignId="it2"/>
                </amx:commandButton>
            </amx:panelGroupLayout>
        </amx:facet>
```

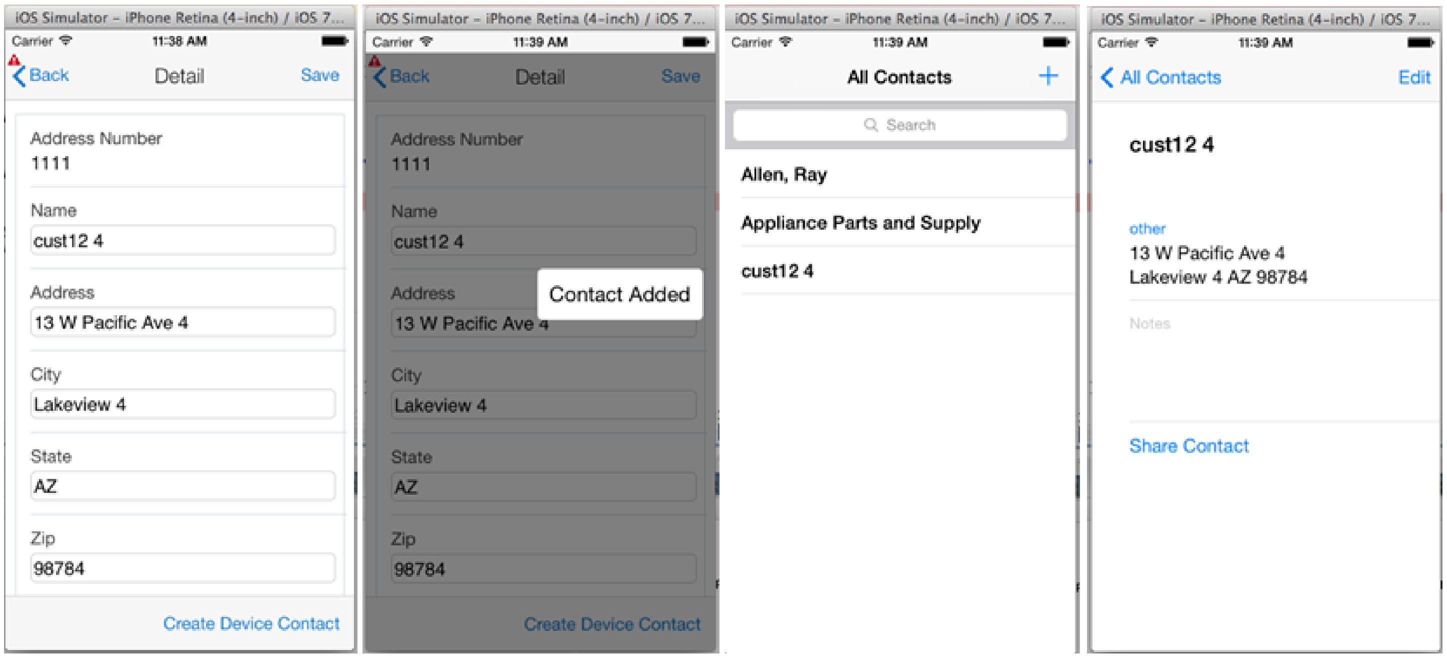
11. Enter the following code for the popup message after the end panel page tag (`</amx:panelPage>`):

```
<!-- display add contact result message. -->
    <amx:popup id="p1" autoDismiss="true">
        <amx:panelGroupLayout id="pgl3" halign="center" valign="middle">
            <amx:commandLink text="#{bindings.addContactResultMsg.inputValue}"
 id="cl3"
                                inlineStyle="white-space:pre;font-
size:larger;color:black;text-decoration:none;">
                <amx:closePopupBehavior id="cpb1" popupId="p1"/>
            </amx:commandLink>
        </amx:panelGroupLayout>
    </amx:popup>
```

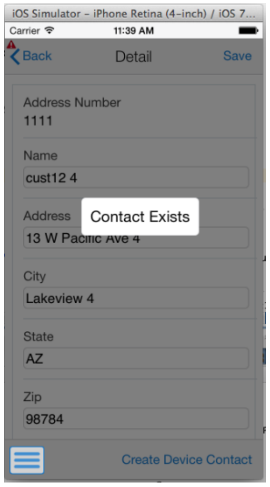
12. Run the application in the simulator to test performing the following tasks in the application:

    a. Open a record and click the **Create Device Contact** button in the footer, which displays the "Contact Added" message.

    b. Go to the device's contacts and you can see the contact listed with the address, as shown in the following example:



If you attempt to add it again, you get the contact exists message, as shown in the following example:



Address Number
1111
Name
cust12 4
Address
13 W Pacific Ave 4
City
Lakeview 4
State
AZ
Zip
98784

7 Appendix B - Extending Mobile Application Archives

Before You Begin

To use mobile application archives, in addition to the prerequisites described in *Prerequisites* in this guide, perform the following tasks.

- Download the JD Edwards EnterpriseOne mobile application archive (.maa) files from the JD Edwards Update Center on My Oracle Support: `https://updatecenter.oracle.com/` .

  In the Update Center, enter "EnterpriseOne Mobile Enterprise Applications" in the Type field to locate the MAAs.
- Remember that to deploy to the Apple store or to your own enterprise store for iOS, you will need an Apple development profile.
- You must read the *"JD Edwards EnterpriseOne Mobile Archive Restricted Use Notice" in the JD Edwards EnterpriseOne Licensing Information User Manual* before using JD Edwards EnterpriseOne mobile archives.

> **Note:** The Oracle MAF extension for JDeveloper must be the same version that was used to create the mobile application archive. For example, MAA files created with MAF 2.0 require the use of Oracle MAF extension 2.0, MAAs created with MAF 2.1 require the use of Oracle MAF extension 2.1, and so forth for subsequent releases. To verify the version of the Oracle MAF extension:
>
> a. In JDeveloper click the Help menu, About, and then click the Extensions tab.
> b. In the "find" field, type `maf` and then press Enter. Scroll to the right to check the version.

Understanding Mobile Application Archives

JD Edwards EnterpriseOne mobile enterprise applications (hereafter referred to simply as mobile apps) are built in JDeveloper using Oracle Mobile Application Framework (MAF). An EnterpriseOne mobile application archive (MAA) is a specially built JDeveloper project that enables developers to take an existing EnterpriseOne mobile app and generate their own application binary (apk or ipa) files. Developers can choose to customize the application and then sign it and deploy it with their own distribution profile. You can use an archive to generate a mobile application that you can deploy and manage locally in your environment without having to download mobile applications from an online web app store.

You can partially customize an MAA to suit your particular business needs. To do so, you copy the archive, customize it, and then publish it as your own "new" application. For iOS, you must publish it with a different application ID in order to install it with your own iOS development profile.

Integration with Oracle Mobile Cloud Service

You can also use an MAA to create a mobile application that can be configured to work with Oracle Mobile Cloud Service. Oracle Mobile Cloud Service is a cloud-based service that provides a unified hub for developing, deploying, maintaining, monitoring, and analyzing your mobile applications and the resources that they rely on. *Generating a New Mobile Application from a Mobile Application Archive* includes steps for configuring a mobile application to work with Oracle Mobile Cloud Service.

For more information about Oracle Mobile Cloud Service, see the *Oracle® Cloud Using Oracle Mobile Cloud Service* available at:

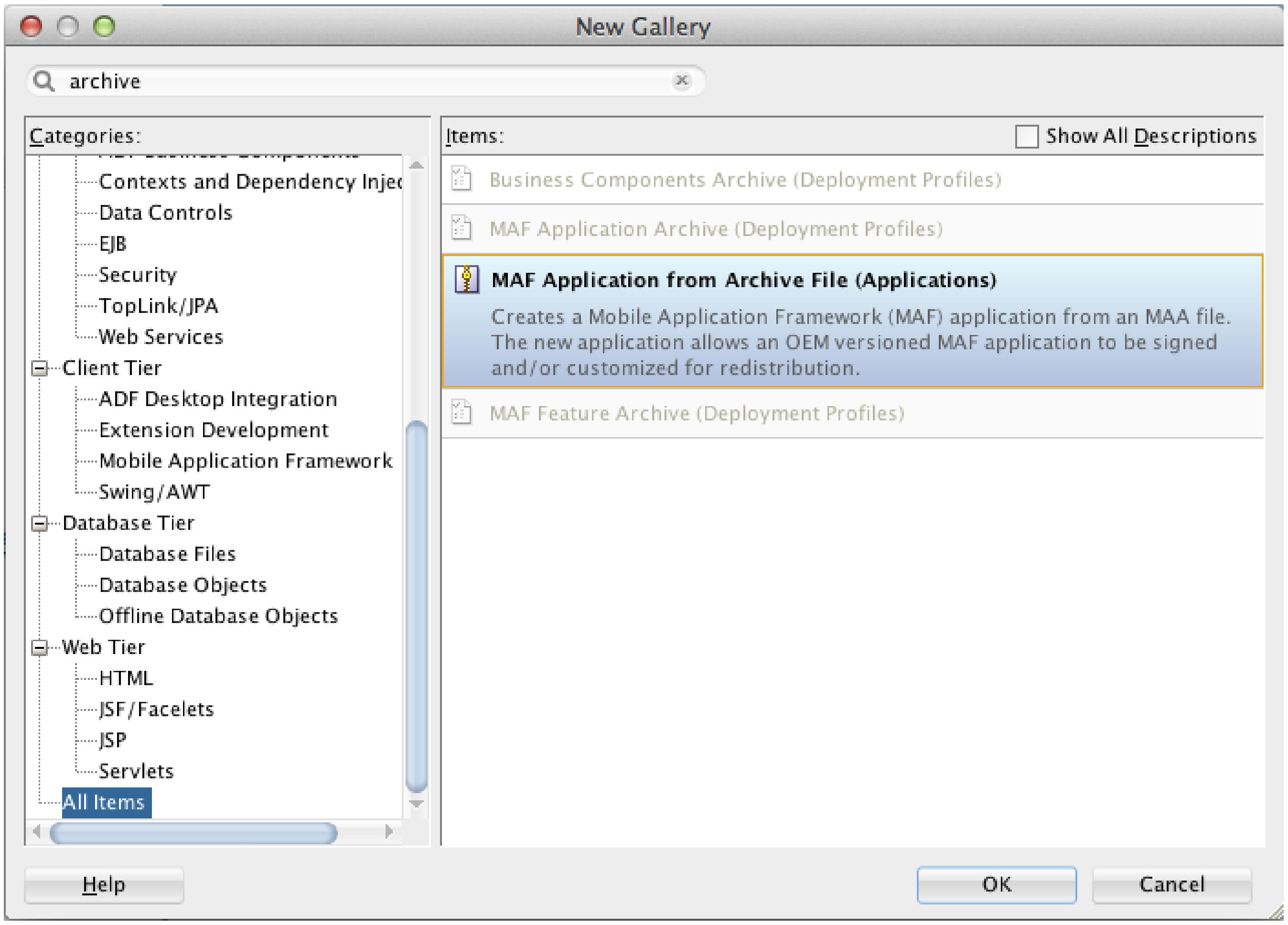
http://docs.oracle.com/cloud/latest/mobilecs_gs/MCSUA/title.htm

Generating a New Mobile Application from a Mobile Application Archive

This section describes how to generate a new mobile application from an MAA. If you are using Oracle Mobile Cloud Service, it also includes steps to configure the new mobile application to work with Oracle Mobile Cloud Service.

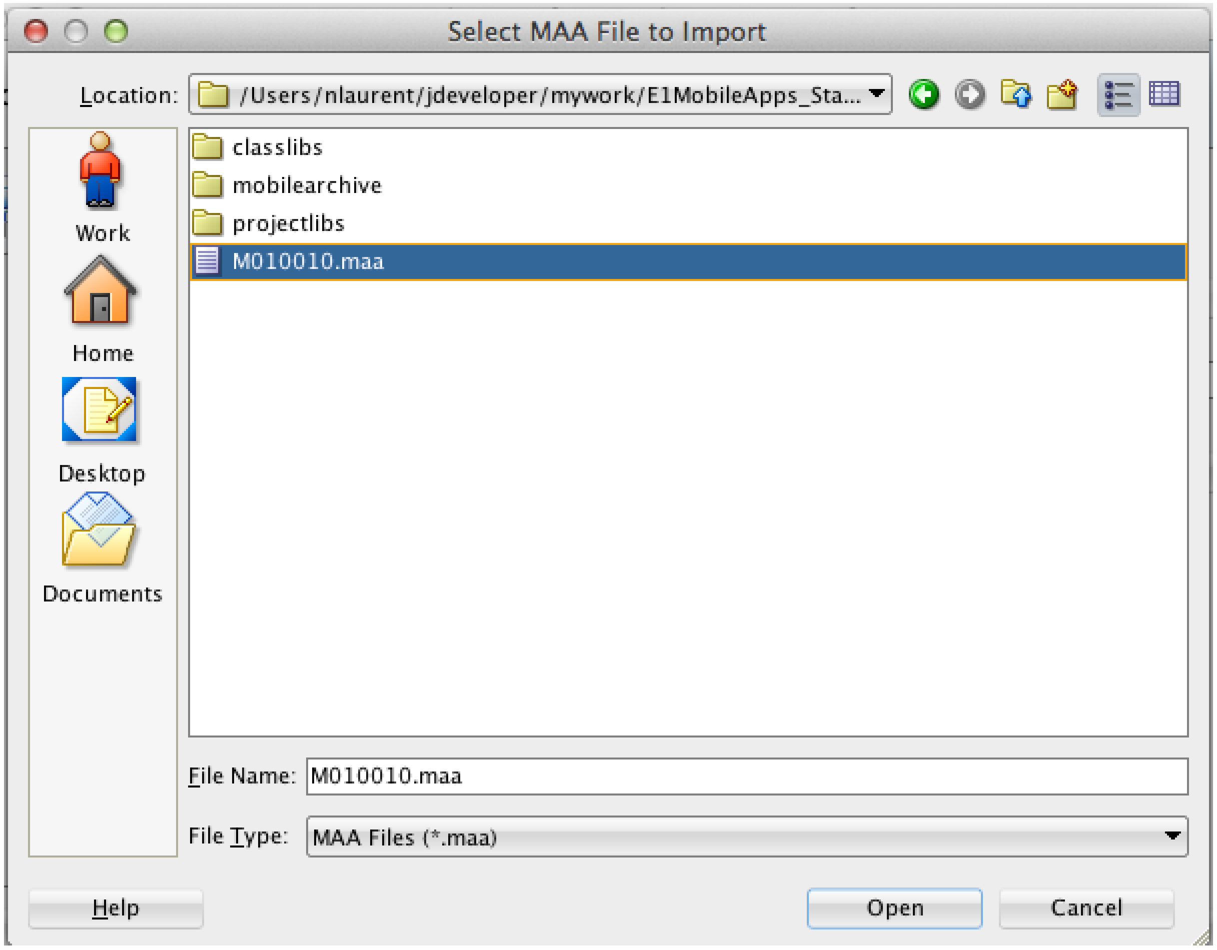
To generate a new mobile application from an MAA:

1. In JDeveloper, select the **File** menu > **New** > **Application**.

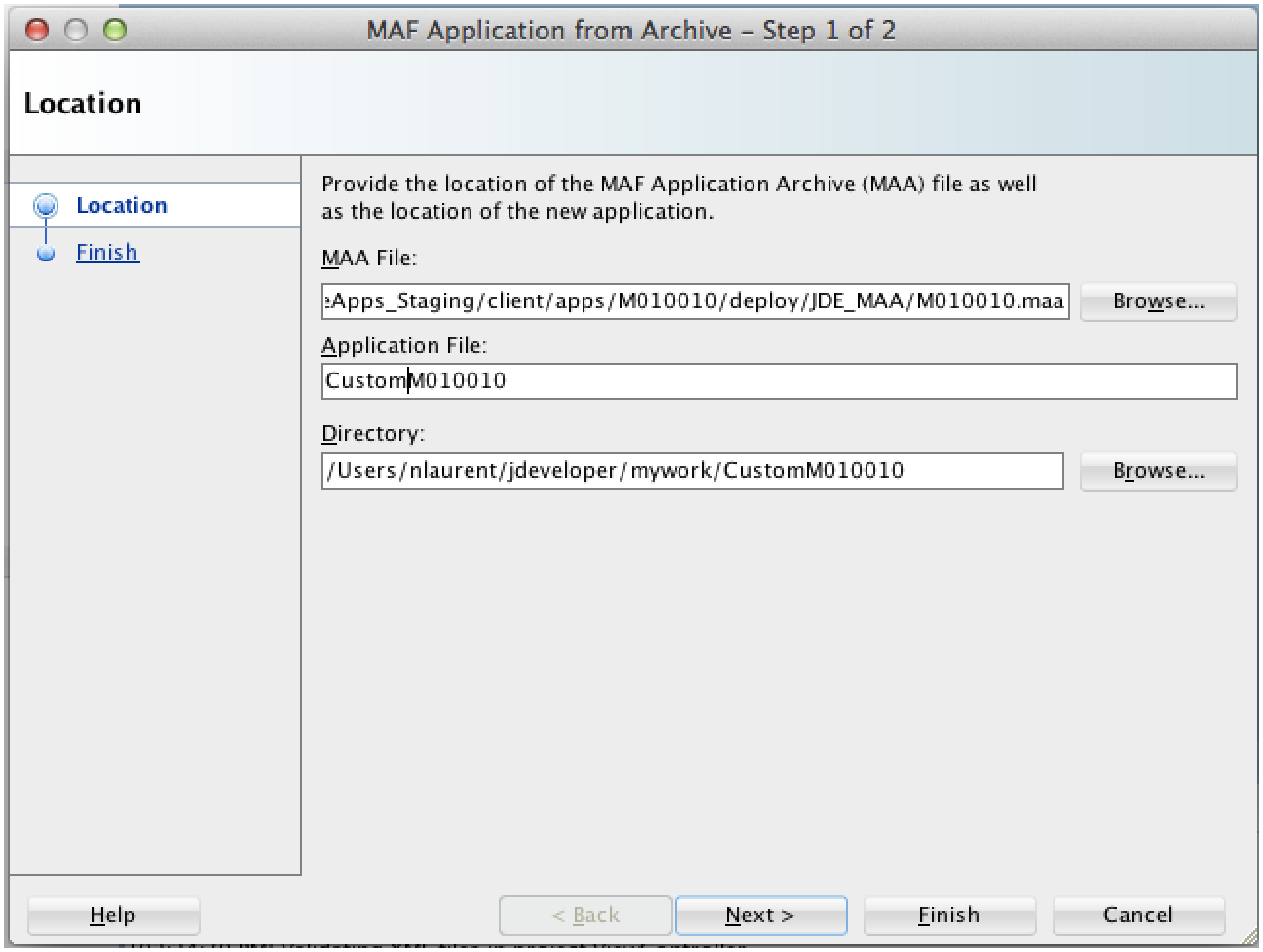


Creates a Mobile Application Framework (MAF) application from an MAA file. The new application allows an OEM versioned MAF application to be signed and/or customized for redistribution.

2. On New Gallery, select **MAF Application from Archive File (Applications)** and click **OK**.


Select MAA File to Import
Location: /Users/nlaurent/jdeveloper/mywork/E1MobileApps_Sta...
Work
Home
Desktop
Documents
classlibs
mobilearchive
projectlibs
M010010.maa
File Name: M010010.maa
File Type: MAA Files (*.maa)
Help
Open
Cancel

3. On Select MAA File to Import, select the .maa file that you want to customize, and then click **Open**.



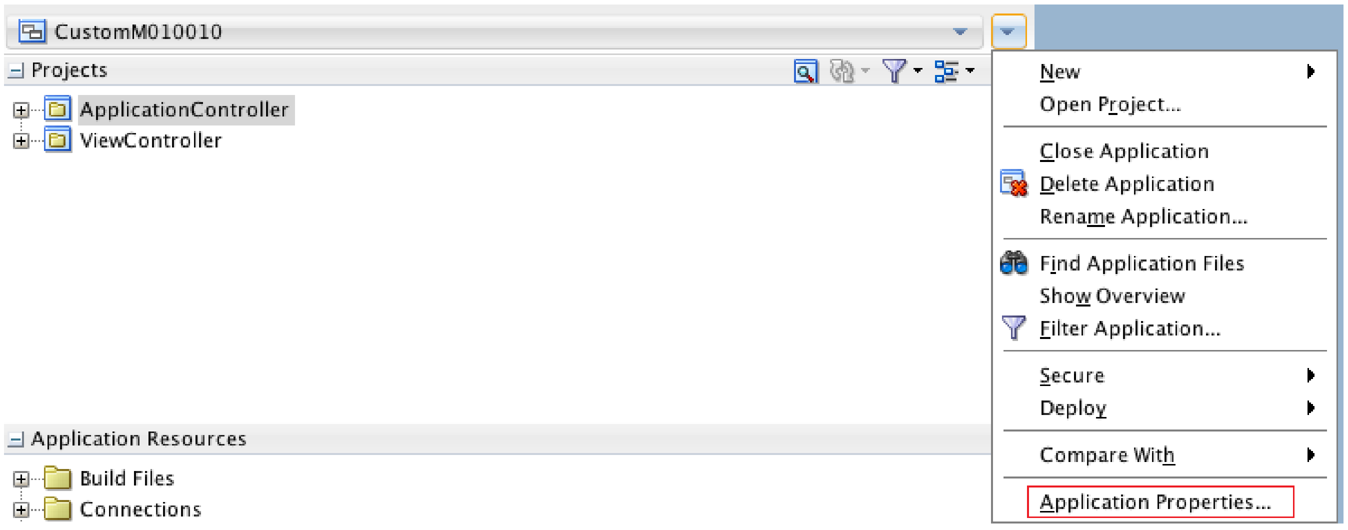
Provide the location of the MAF Application Archive (MAA) file as well as the location of the new application.

MAA File: :Apps_Staging/client/apps/M010010/deploy/JDE_MAA/M010010.maa

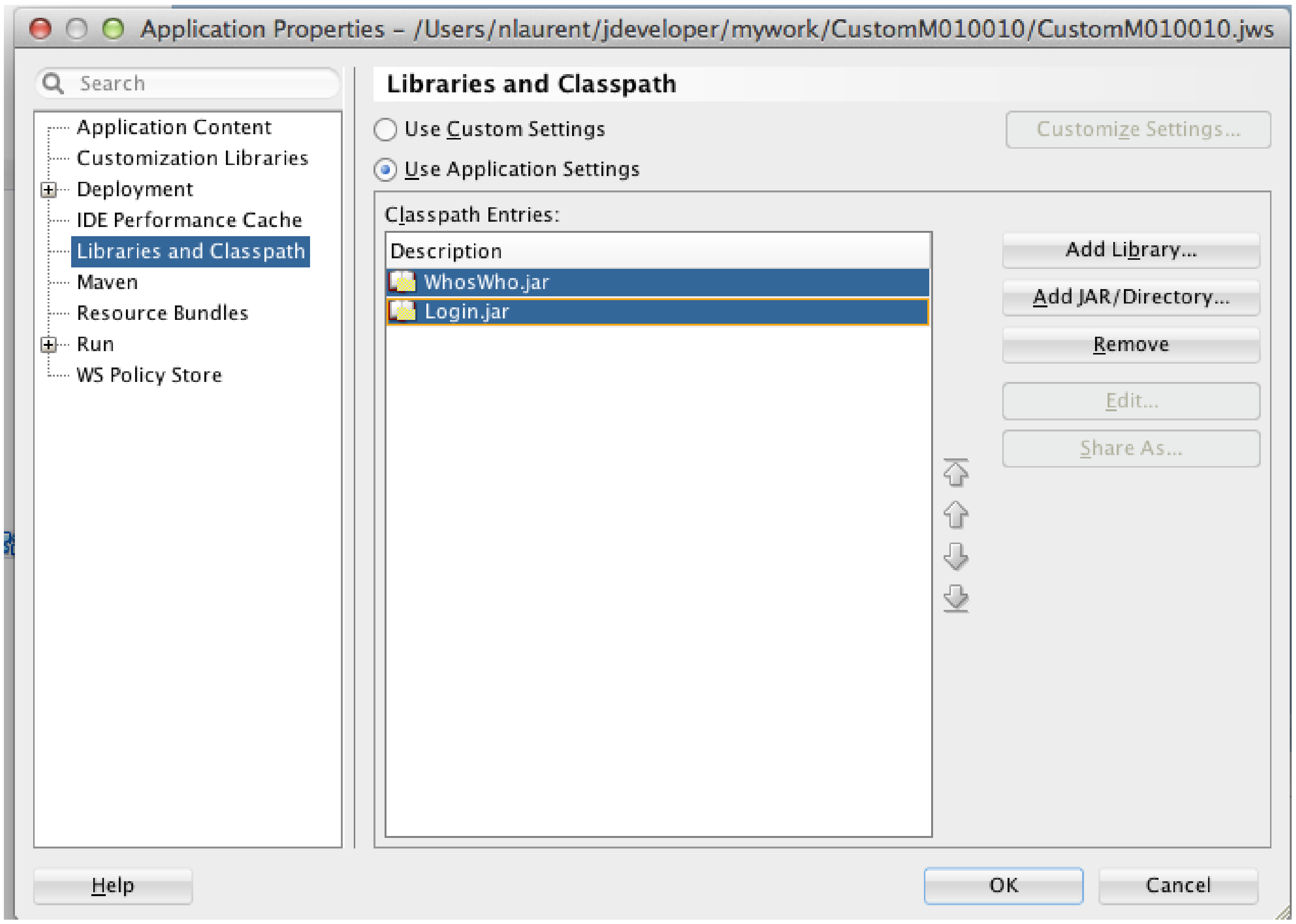
Application File: CustomM010010

Directory: /Users/nlaurent/jdeveloper/mywork/CustomM010010

4. On "MAF Application from Archive - Step 1 of 2," modify the name of the application in the Application File field.
5. Click **Next**, and then click **Finish**.



6. Click the drop-down menu next to the new application, and select **Application Properties**.
7. Navigate to **Libraries and Classpath**.


Application Properties – /Users/nlaurent/jdeveloper/mywork/CustomM010010/CustomM010010.jws

Libraries and Classpath

( ) Use Custom Settings
(●) Use Application Settings

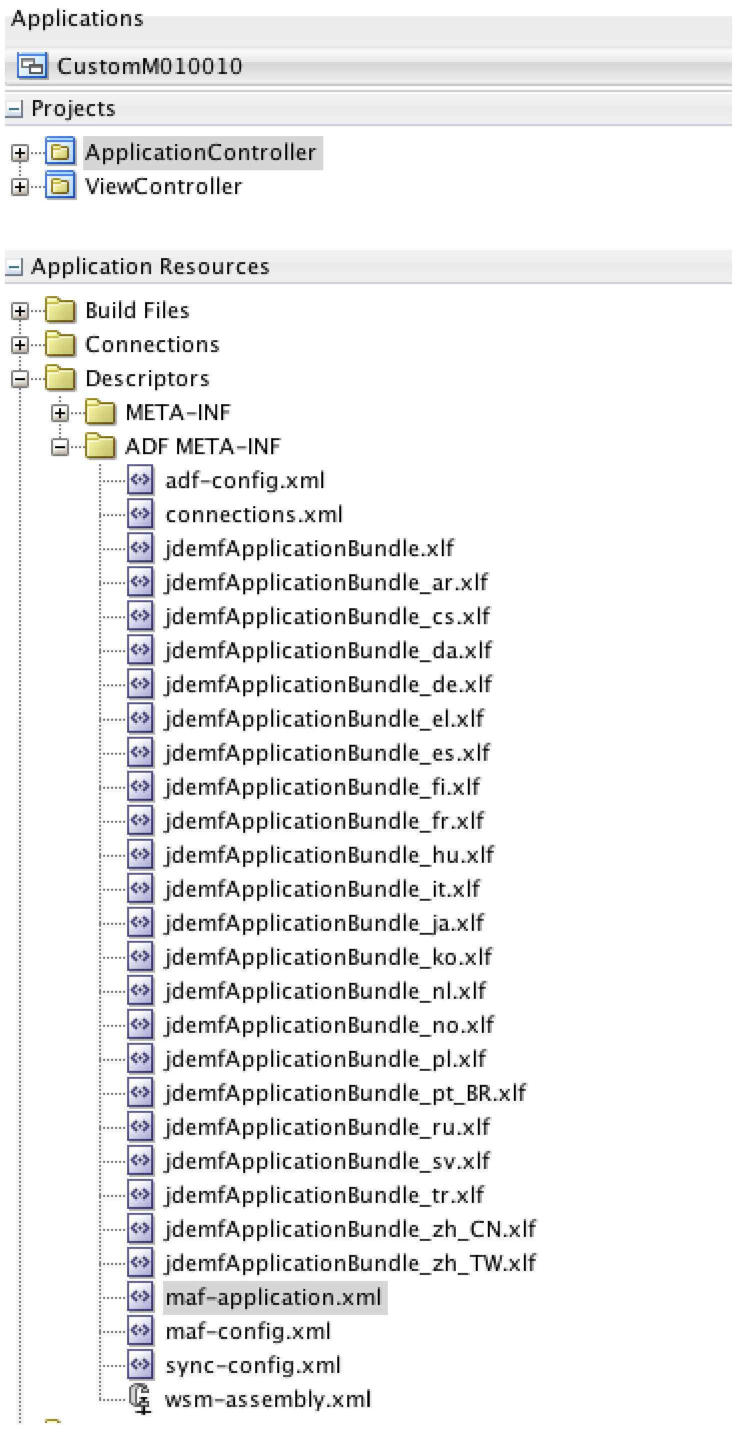
Classpath Entries:

Description
WhosWho.jar
Login.jar

8. On Libraries and Classpath, select the entries listed, and then click the **Remove** button to delete them.
9. Click **Add JAR/Directory**.
10. On Add Archive or Directory, select the **ExternalLibs** folder.
11. Highlight all entries to add them, and then click **Open**.

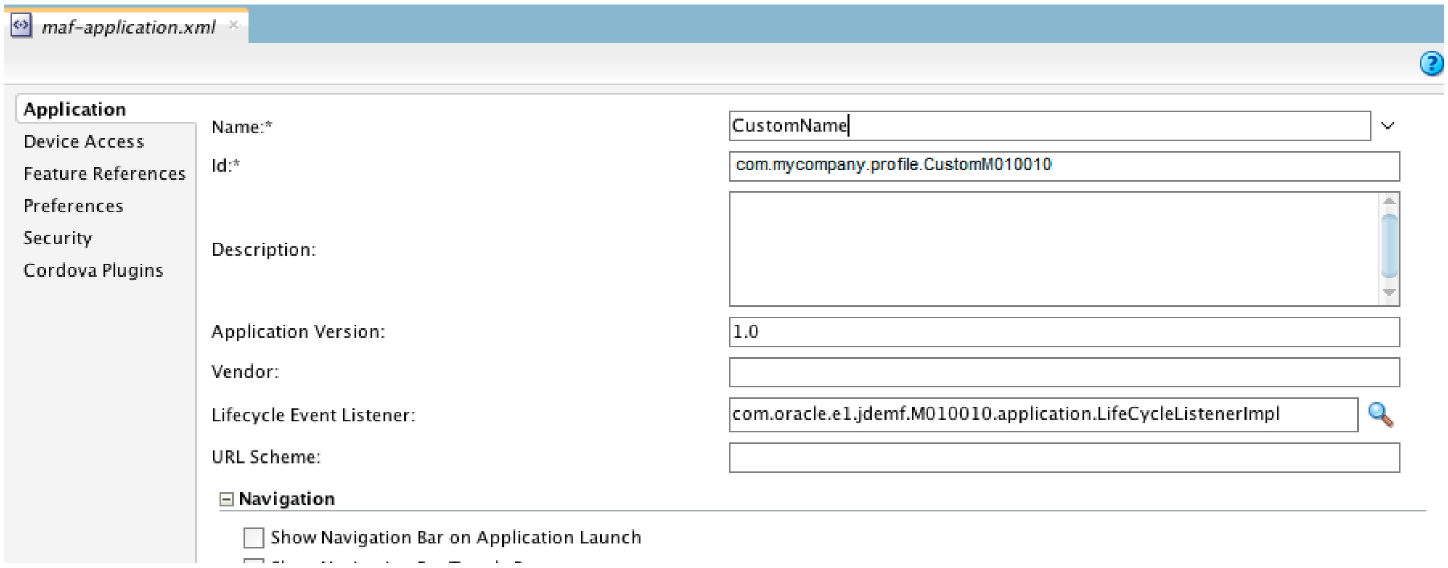
    This points both JAR files to the right location.
12. Click **OK** to save it.
13. Right-click **ApplicationController** and select **Project Properties**.
14. On Libraries and Classpath, click the check box next to JDEMobileFramework.jar, and then click the **Remove** button to remove it.
15. Select **Add JAR/Directory**.
16. On Add Archive or Directory, select the **ExternalLibs** folder, and then click **Open**.
17. Select **JDEMobileFramework.jar** and click **Open**.

    This points the JDEMobileFramework.jar to the correct location.



Applications
CustomM010010
Projects
ApplicationController
ViewController
Application Resources
Build Files
Connections
Descriptors
META-INF
ADF META-INF
adf-config.xml
connections.xml
jdemfApplicationBundle.xlf
jdemfApplicationBundle_ar.xlf
jdemfApplicationBundle_cs.xlf
jdemfApplicationBundle_da.xlf
jdemfApplicationBundle_de.xlf
jdemfApplicationBundle_el.xlf
jdemfApplicationBundle_es.xlf
jdemfApplicationBundle_fi.xlf
jdemfApplicationBundle_fr.xlf
jdemfApplicationBundle_hu.xlf
jdemfApplicationBundle_it.xlf
jdemfApplicationBundle_ja.xlf
jdemfApplicationBundle_ko.xlf
jdemfApplicationBundle_nl.xlf
jdemfApplicationBundle_no.xlf
jdemfApplicationBundle_pl.xlf
jdemfApplicationBundle_pt_BR.xlf
jdemfApplicationBundle_ru.xlf
jdemfApplicationBundle_sv.xlf
jdemfApplicationBundle_tr.xlf
jdemfApplicationBundle_zh_CN.xlf
jdemfApplicationBundle_zh_TW.xlf
maf-application.xml
maf-config.xml
sync-config.xml
wsm-assembly.xml

18. Under Application Resources, open the **maf-application.xml**.



Name:* CustomName
Id:* com.mycompany.profile.CustomM010010
Description:
Application Version: 1.0
Vendor:
Lifecycle Event Listener: com.oracle.e1.jdemf.M010010.application.LifeCycleListenerImpl
URL Scheme:

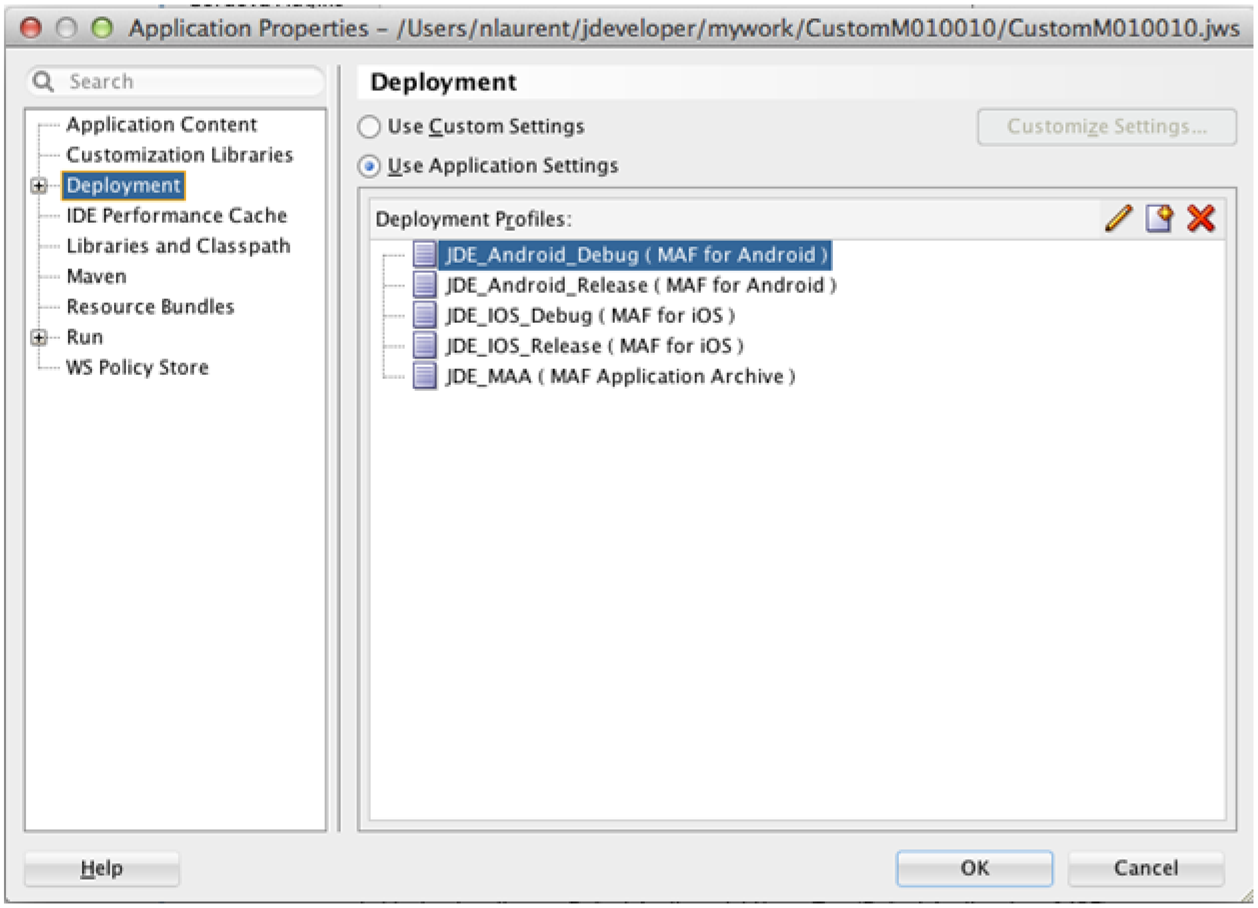
Navigation

Show Navigation Bar on Application Launch

19. Change the Name and Id of the application. Use the ID associated with your Apple Distribution Profile.

    This ensures that the application will not overwrite or interfere with the original application when deployed.
20. Create a new deployment profile that will use the new name and ID. To do so:

    a. Right-click the application and select **Properties**.



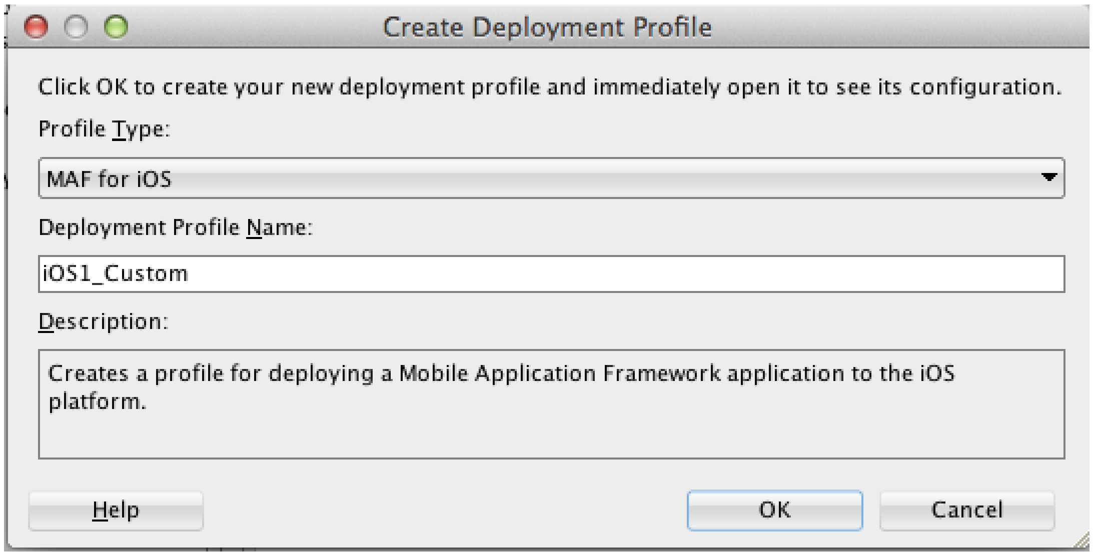
Deployment

( ) Use Custom Settings
(•) Use Application Settings

Deployment Profiles:

- JDE_Android_Debug (MAF for Android)
- JDE_Android_Release (MAF for Android)
- JDE_IOS_Debug (MAF for iOS)
- JDE_IOS_Release (MAF for iOS)
- JDE_MAA (MAF Application Archive)

b. On Application Properties, select **Deployment**, and then click the "**new**" icon.



Click OK to create your new deployment profile and immediately open it to see its configuration.

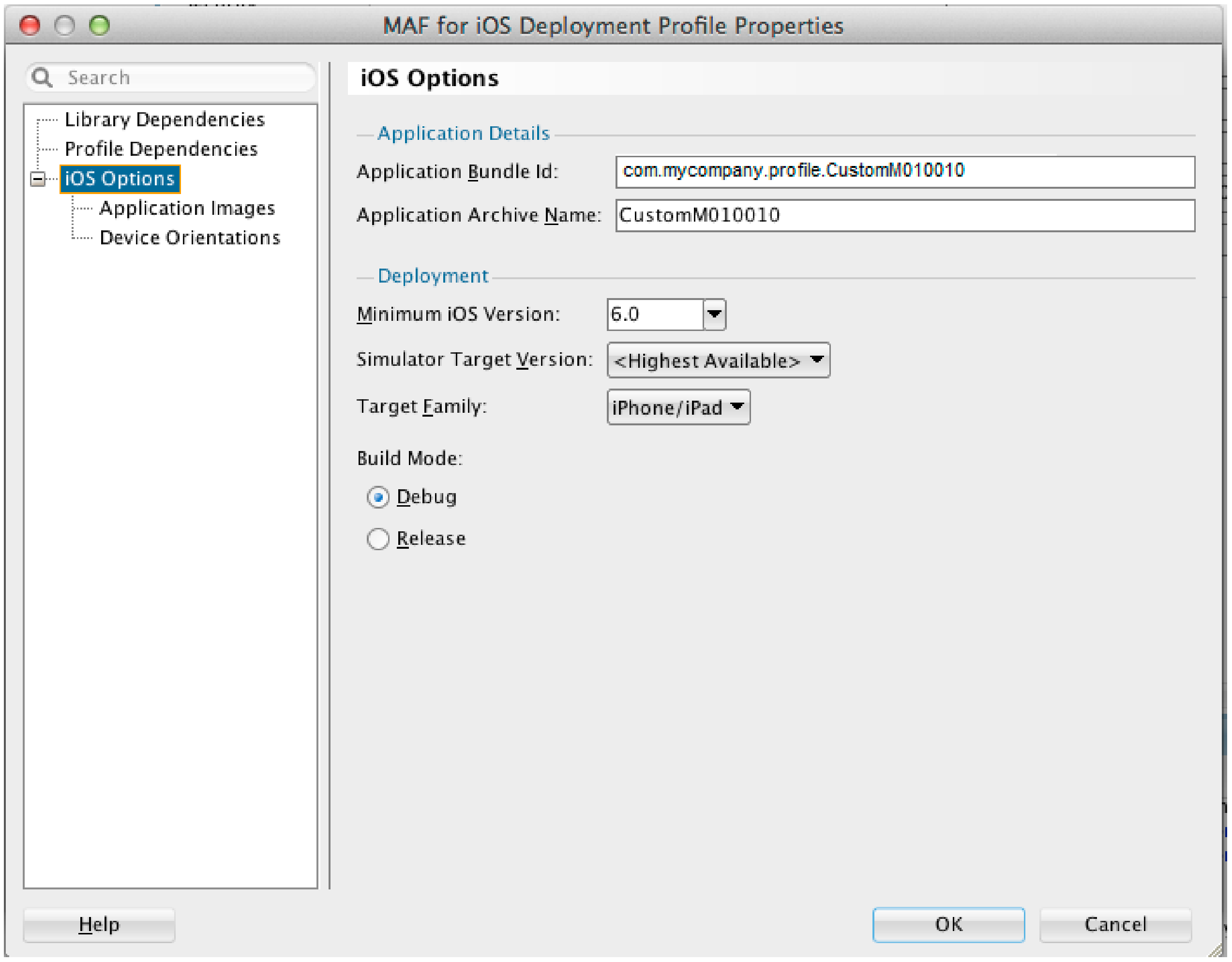
Profile Type: MAF for iOS

Deployment Profile Name: iOS1_Custom

Description: Creates a profile for deploying a Mobile Application Framework application to the iOS platform.

c. Select **MAF for iOS** (or **MAF for Android**) and give your profile a name, for example iOS1_Custom. Click **OK**.

The Profile Properties dialog box displays the application and deployment details:



iOS Options

Application Details

Application Bundle Id: com.mycompany.profile.CustomM010010

Application Archive Name: CustomM010010

Deployment

Minimum iOS Version: 6.0

Simulator Target Version: <Highest Available>

Target Family: iPhone/iPad

Build Mode: [✓ Debug] Release

d. Click **OK**.

21. Use the new deployment profile to deploy and test the application in the simulator/emulator.

    If simulator tests are successful, you can generate distribution packages to deploy the application to devices or stores.

Note: If you are using Oracle Mobile Cloud Service, follow the steps below before testing and deploying your application.

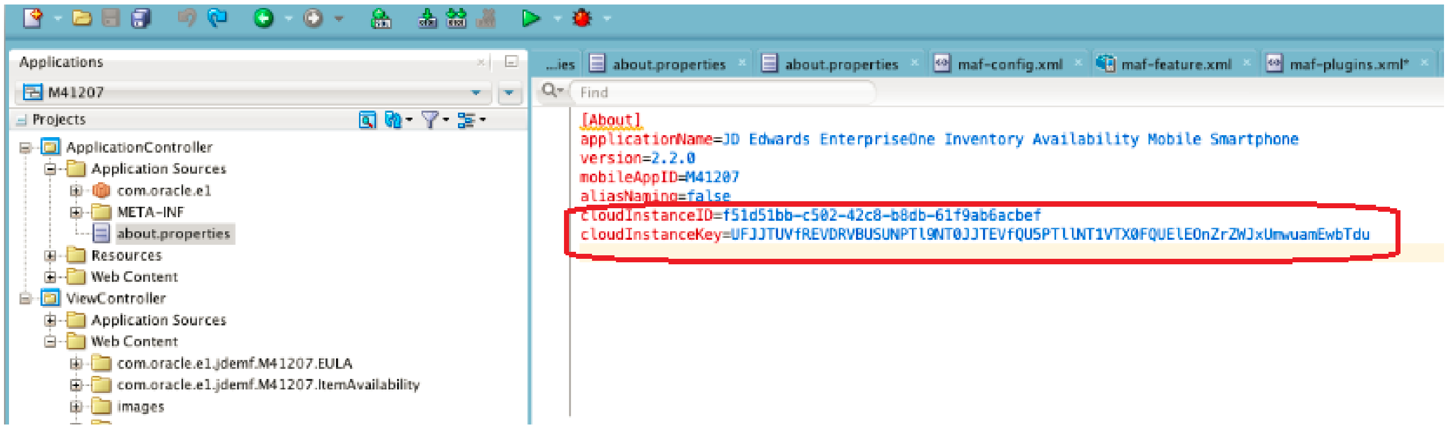
To configure the new mobile application to work with Oracle Mobile Cloud Service (MCS):

1. Access the MCS Instance and locate the Mobile Backend ID and the anonymous key. If you have not configured a Mobile Backend yet, see "Mobile Backends" in the *Oracle® Cloud Using Oracle Mobile Cloud Service* available at:

   http://docs.oracle.com/cloud/latest/mobilecs_gs/MCSUA/title.htm
2. In JDeveloper, add the Mobile Backend ID and anonymous key to the following parameters in the about.properties file of the mobile application:

- cloudInstanceID=*<mobile_backend_ID>*
- cloudInstanceKey=*<anonymous_key>*

The following image shows an example of the parameters in the about.properties file:



```
[About]
applicationName=JD Edwards EnterpriseOne Inventory Availability Mobile Smartphone
version=2.2.0
mobileAppID=M41207
aliasNaming=false
cloudInstanceID=f51d51bb-c502-42c8-b8db-61f9ab6acbef
cloudInstanceKey=UFJJTUVfREVDRVBUSUNPTl9NT0JJTEVfQU5PTllNT1VTX0FQUElEOnZrZWJxUmwuamEwbTdu
```

3. Provide mobile application users with the URL they will need to run the mobile application through MCS:

   a. Access the MCS Instance and locate the URL for the jderest API, which appears in the following format on the General tab:

      http://*serve*:*port*/mobile/custom/jderest

   b. Give users this URL with "jderest" removed from the end, for example:

      http://*server*:*port*/mobile/custom/

      When users open the mobile application, the first screen will prompt them for this URL.

Mobile Cloud Service Login Only Pass-through Option (Release 9.2.0.5)

Oracle Mobile Cloud Service users can choose which pass-through activity is monitored. However, you have the option to allow all traffic to be monitored or just mobile app logins.

The login only pass-through option allows the login to pass through MCS.

You can use JDeveloper to add the following parameters in the about.properties file of the mobile application:

- loginOnlyURL=*http://<host>:<port>*

Note: Considerations when using the loginOnlyURL value:

- When you run a JD Edwards EnterpriseOne mobile application, the system prompts for a URL, which points to the AIS Server and provides all data to the mobile application.
- When cloudInstanceKey and cloudInstanceID are used, the URL must point to the MCS custom API URL. MCS will then forward all requests to AIS.
- You can use the loginOnlyURL value in conjunction with the cloudInstanceKey and cloudInstanceID values.
- If you use the loginOnlyURL, only the tokenrequest service from the mobile application will go to the URL specified and all other requests will go the URL added to the application by the user. This allows for a model where the JD Edwards EnterpriseOne mobile application uses the MCS platform for its authorization step only and send all other requests directly to AIS.

- serverURL=*http://<host>:<port>*

Note: Considerations when using the serverURL value:

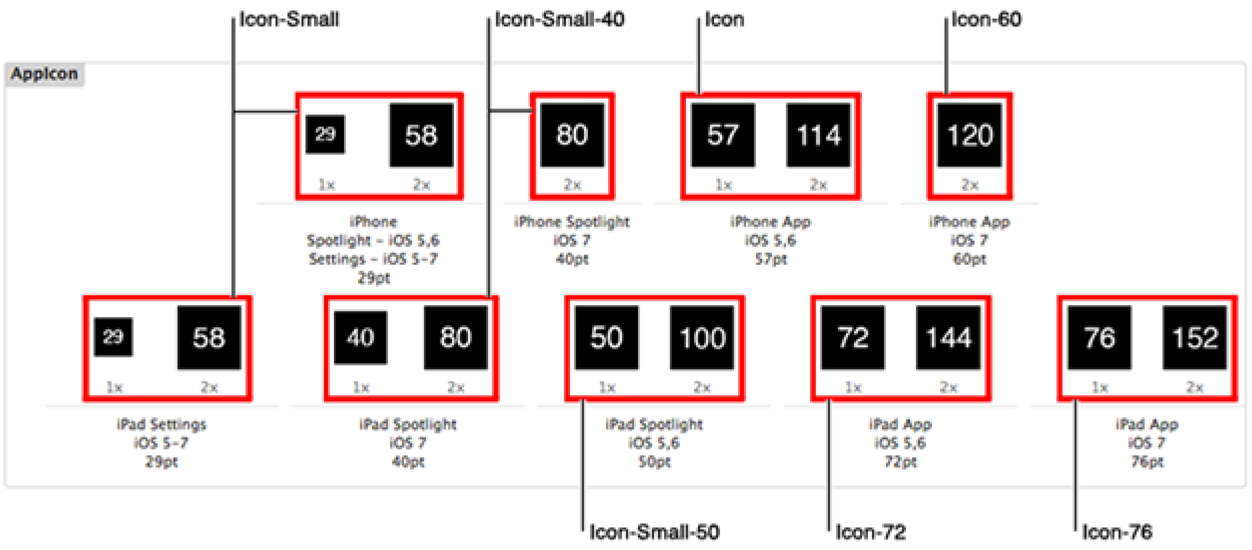
- You have the option to use the serverURL value by itself or along other MCS values.
- If you use this value with the loginOnlyURL value, the application uses the loginOnlyURL to perform the tokenrequest service, then all subsequent requests will use serverURL.
- When you add the serverURL value to the about.properties file, the system populates the URL value, which the user typically needs to enter on the app's first run. The system places the URL value in the URL field in the settings of the app, just as if the user had entered the URL value. The user is allowed to change the URL value to an alternate URL value.
- In addition, if the settings are left blank, the value from serverURL will be applied again.

Customization Options

This section describes the features you can customize in an MAA.

Customizing the Application Icons and Splash Screens

The application icon represents the application on the home screen of the device. The following diagram shows the icon size requirements for iOS 6 and iOS 7:

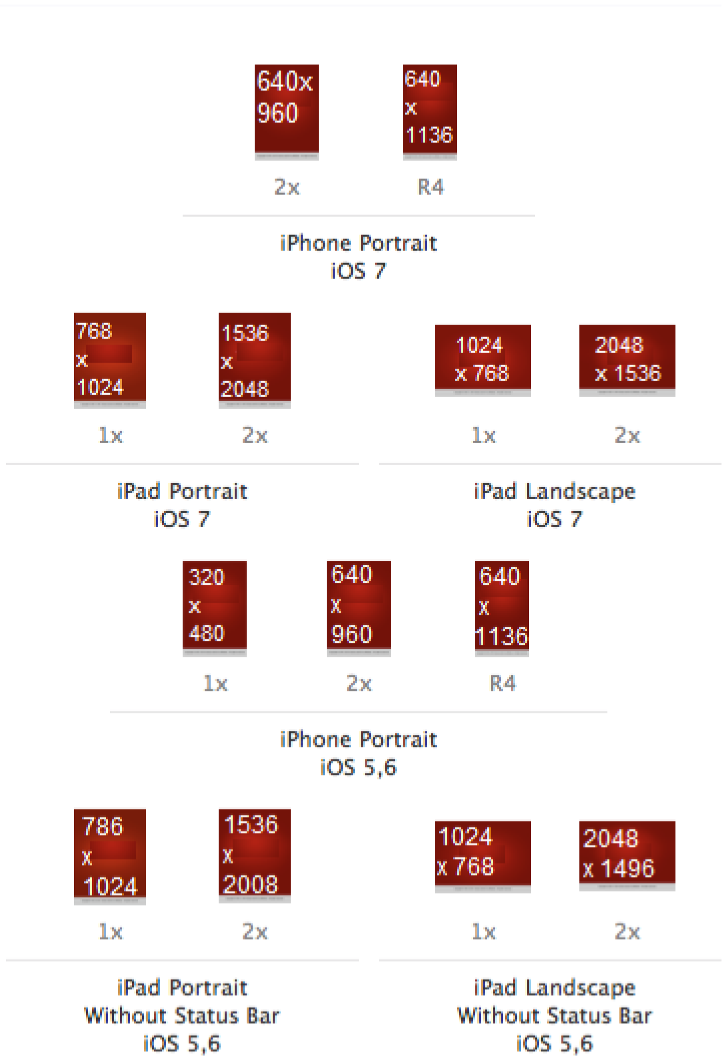


For Android, these are the size requirements for the application icon:

- XHDPI: 96 x 96px
- HDPI: 72 x 72px
- MDPI: 48 x 48px
- LDPI: 24 x 24px

The launch image or splash screen appears immediately after the application is started.

The following diagram shows the sizes that are required to override the launch image for iOS 6 and iOS 7:

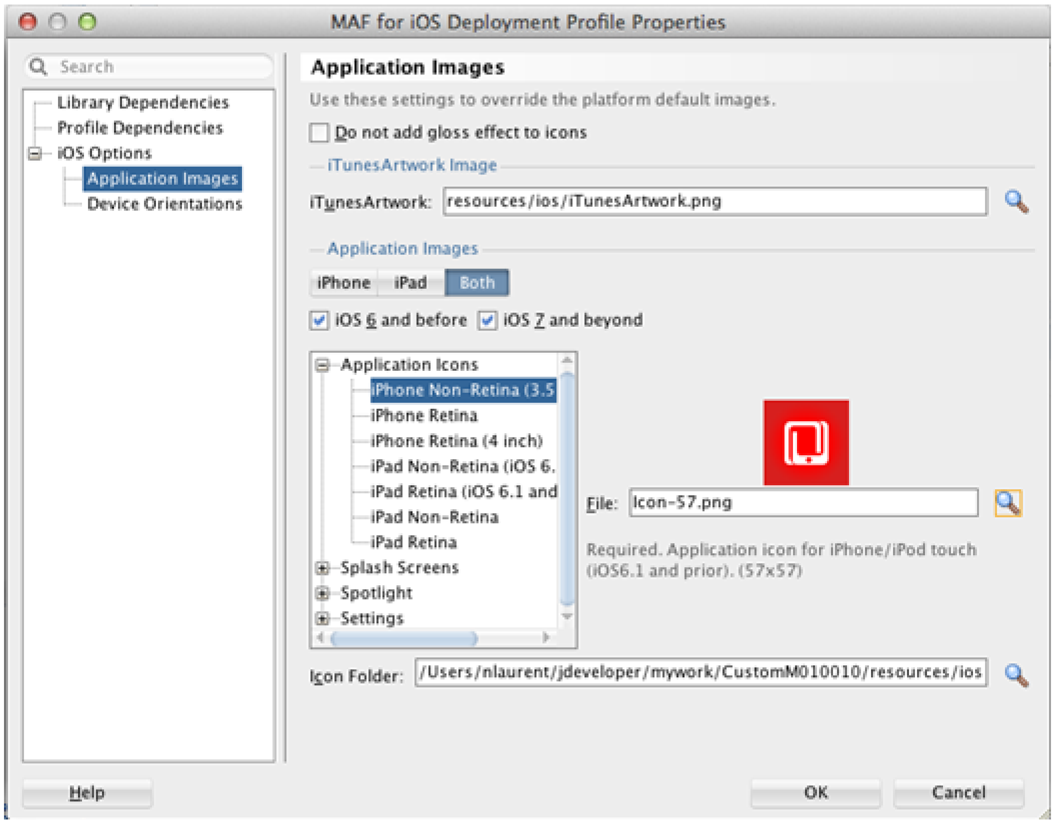


For Android, these are the size requirements for the application splash screen:

- LDPI: Portrait: 200 x 320px. Landscape: 320 x 200px.
- MDPI: Portrait: 320 x 480px. Landscape: 480 x 320px.
- HDPI: Portrait: 480 x 800px. Landscape: 800 x 480px.
- XHDPI: Portrait: 720 x 1280px. Landscape: 1280 x 720px.

The deployment profile contains all the application and launch screen configurations. Modify the definitions in the deployment profile to use your custom icons and deploy with that profile.

The following example shows the iOS deployment profile properties for application images:



Application Images

Use these settings to override the platform default images.

[ ] Do not add gloss effect to icons

iTunesArtwork Image

iTunesArtwork: resources/ios/iTunesArtwork.png

Application Images

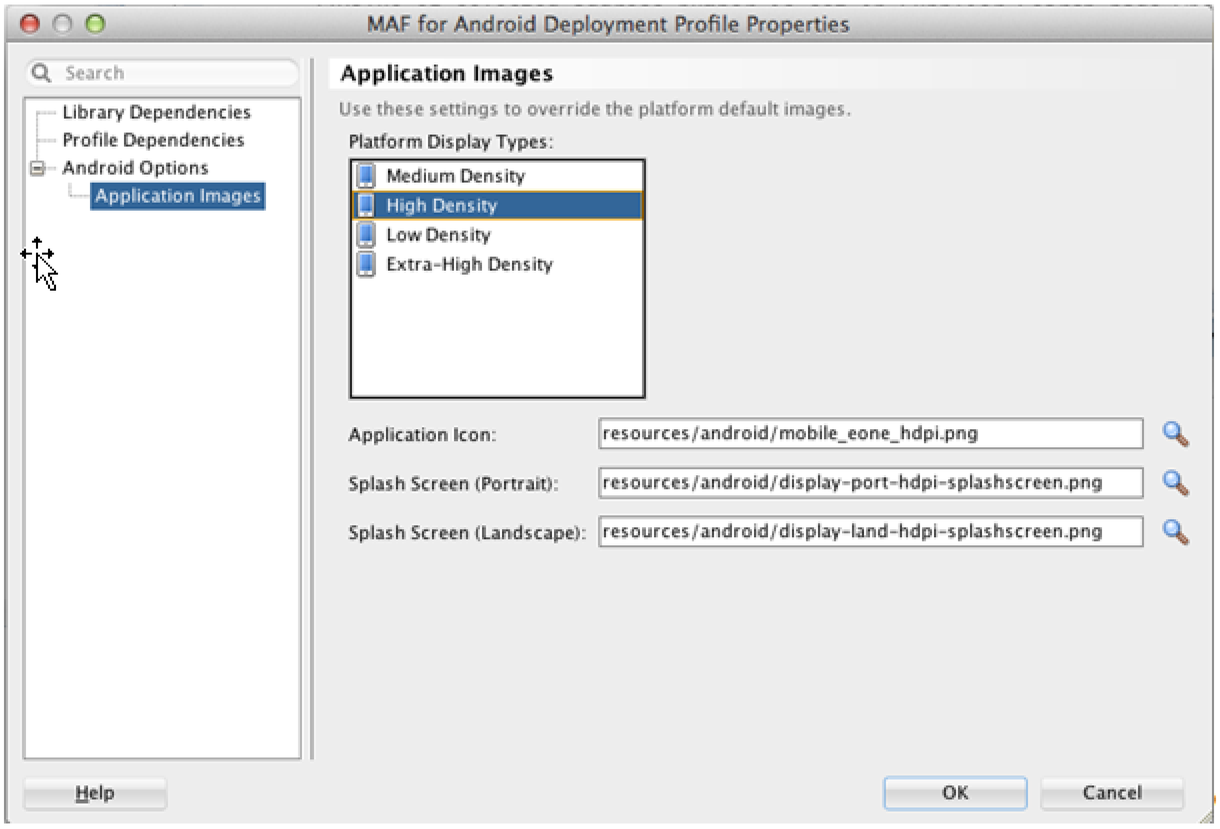
[✓] iOS 6 and before [✓] iOS 7 and beyond

File: Icon-57.png

Required. Application icon for iPhone/iPod touch (iOS6.1 and prior). (57x57)

Icon Folder: /Users/nlaurent/jdeveloper/mywork/CustomM010010/resources/ios

The following example shows the Android deployment profile properties for application images:



Application Images

Use these settings to override the platform default images.

Platform Display Types:

- Medium Density
- High Density
- Low Density
- Extra-High Density

Application Icon: resources/android/mobile_eone_hdpi.png

Splash Screen (Portrait): resources/android/display-port-hdpi-splashscreen.png

Splash Screen (Landscape): resources/android/display-land-hdpi-splashscreen.png

Customizing the Brand Images

An Oracle JD Edwards logo image will appear on the configuration screen, login screen, and on error screens when there are connection issues. A second logo image appears on the springboard.

Do not use the logo images provided by Oracle; they are provided for example purposes only. If you do not insert an image, a question mark (?) appears where the image should be.

To override the login logo in your custom application, replace the image in the following location with an image of the same name and dimensions (242x87):

```
ViewController/public_html/images/jde_transparent_no_jde_small.png
```

To override the springboard logo in your custom application, replace the image in the following location with an image of the same name and dimensions (242x87).

```
ViewController/public_html/images/jde_transparent_springboard.png
```

Tip: For the springboard, you should use a transparent image that works well on a dark background.

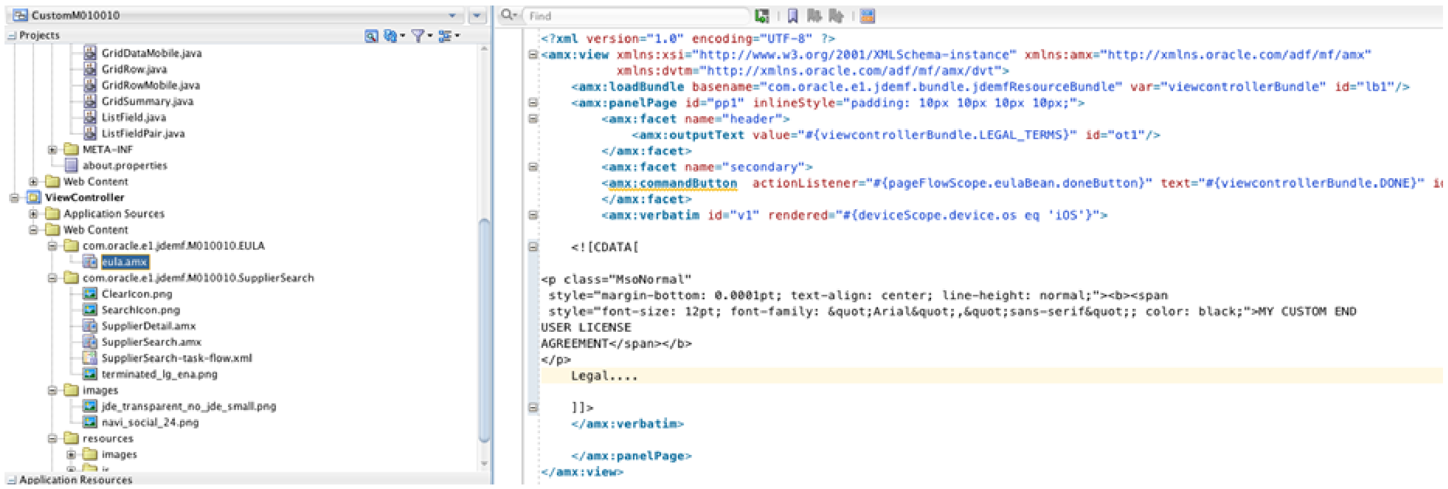
Additionally, there might be other logo icons depending on the specific application you are customizing. These icons are located in the ViewController/public_html folder. To determine which image you need to replace, you must view the amx page where it appears and determine the name and location of the image file.

Customizing the End User License Agreement (EULA)

Users can access the EULA from the Legal Terms link on the springboard. The EULA is included in the application in a feature ending in EULA. To change the content of the EULA, modify the eula.amx page within the EULA feature.

See *"JD Edwards EnterpriseOne Mobile Archive Restricted Use Notice" in the JD Edwards EnterpriseOne Licensing Information User Manual* for a list of terms that must be included in the EULA.

The delivered page includes HTML formatted text within a `<![CDATA[` tag. You can use this structure to include your EULA if it is already formatted with HTML. Or you can design this EULA page just like any other amx page and use amx formatting, as shown in the following example:



```
<?xml version="1.0" encoding="UTF-8" ?>
<amx:view xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:amx="http://xmlns.oracle.com/adf/mf/amx"
          xmlns:dvtm="http://xmlns.oracle.com/adf/mf/amx/dvt">
    <amx:loadBundle basename="com.oracle.e1.jdemf.bundle.jdemfResourceBundle" var="viewcontrollerBundle" id="lb1"/>
    <amx:panelPage id="pp1" inlineStyle="padding: 10px 10px 10px 10px;">
        <amx:facet name="header">
            <amx:outputText value="#{viewcontrollerBundle.LEGAL_TERMS}" id="ot1"/>
        </amx:facet>
        <amx:facet name="secondary">
        <amx:commandButton  actionListener="#{pageFlowScope.eulaBean.doneButton}" text="#{viewcontrollerBundle.DONE}" i
        </amx:facet>
        <amx:verbatim id="v1" rendered="#{deviceScope.device.os eq 'iOS'}">

    <![CDATA[

<p class="MsoNormal"
 style="margin-bottom: 0.0001pt; text-align: center; line-height: normal;"><b><span
 style="font-size: 12pt; font-family: &quot;Arial&quot;,&quot;sans-serif&quot;; color: black;">MY CUSTOM END
USER LICENSE
AGREEMENT</span></b>
</p>
    Legal....

    ]]>
    </amx:verbatim>

    </amx:panelPage>
</amx:view>
```

Customizing the About Page

The About page is accessed from the About link on the springboard. The About page contains the following information:

- Application name and version (displayed on the General tab).
- Mobile application ID (displayed on the Advanced tab).

The information on the About page is configured in the mobile application and is stored in the about.properties file. In JDeveloper, you can open the about.properties file, which is included in the mobile download files from Oracle Software Delivery Cloud, and view the details of the About page.

Note: The mobile application ID is also part of the security configuration for the application. This ID corresponds to an Object Management Workbench (OMW) application object in EnterpriseOne. The security for the mobile application is inherited from the EnterpriseOne security configured for the OMW object of this name. If you modify this value in the mobile application, you must:

- Create a corresponding object in OMW.
- Use Security Workbench to configure application security for the new object.

Customizing the Pages

You can customize an amx page in the ViewController by reformatting, moving fields, hiding fields (rendered=false), and changing the look of the page in general.

You can change labels on the page by directly entering a new text value for the label or by modifying the associated translation string in the translation bundles. The bundles are located in the com.oracle.e1.jdemf.bundle package of the Application Controller.

Note: When performing these types of customizations, do not remove any property listeners or action listeners, otherwise you risk compromising the application functionality.

Extension Options

This section describes how you can extend an MAA to:

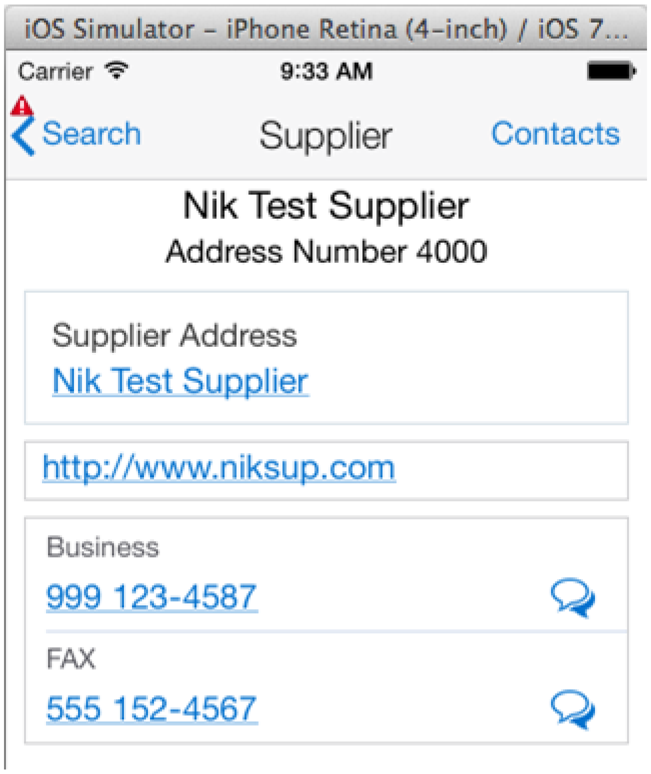
- Display additional data.
- Remove existing fields or data.
- Include new pages.

Displaying Additional Data

To display additional data in an MAA, you have to configure additional service calls to retrieve the data from EnterpriseOne. You use Java code to enable the MAA to perform additional service calls.

Example - Adding Additional Data to the Supplier Search Mobile Application

This is an example of the address, URL, and phones details for a supplier in the Supplier Search application:



Nik Test Supplier
Address Number 4000

Supplier Address
Nik Test Supplier

http://www.niksup.com

Business
999 123-4587

FAX
555 152-4567

You can use Java code to add category code information from the EnterpriseOne Address Book record to this Supplier details page.

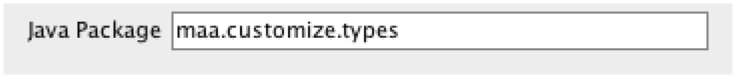
The Address Number is the key to this information. When a record is selected, the address number of that record is used to fetch the category codes. So in the SupplierSearch.amx page, a new setPropertyListener is added when a list item is selected. The new setPropertyListener is highlighted in **bold** in this example code:

```
<amx:listView var="row" value="#{bindings.rowset1.collectionModel}"
 fetchSize="#{bindings.rowset1.rangeSize}"
                  inlineStyle="position:absolute; top:72px; bottom:0; left:0; right:0;
 border-top:1px solid #BBBBBB;" id="lv1">
      <amx:listItem id="li1" action="Detail">
        <amx:tableLayout width="100%" id="tl2">
          <amx:rowLayout id="rl3">
            <amx:cellFormat width="10px" rowSpan="2" id="cf7"/>
            <amx:cellFormat width="100%" height="28px" id="cf8">
              <amx:outputText value="#{row.SAlphaName_26.bindings.value.inputValue}"
 id="ot4" truncateAt="30"/>
            </amx:cellFormat>
          </amx:rowLayout>
          <amx:rowLayout id="rl2">
            <amx:cellFormat width="100%" height="12px" id="cf5">
              <amx:outputText value="#{viewcontrollerBundle1.ADDRESS_NUMBER}
 #{row.mnAddressNumber_25.bindings.value.inputValue}"
                              styleClass="adfmf-listItem-captionText" id="ot3"
 truncateAt="30"/>
            </amx:cellFormat>
          </amx:rowLayout>
        </amx:tableLayout>
        <amx:setPropertyListener id="spl4" from="#{bindings.searchName.inputValue ne '' ?
 'true' : 'false'}"
```

```
                                    to="#{pageFlowScope.searchExecuted}"/>
           <amx:setPropertyListener id="spl5" from="#{row.rowKey}"
 to="#{pageFlowScope.selectedRowKey}"/>
           <amx:setPropertyListener id="spl6"
 from="#{row.mnAddressNumber_25.bindings.value.inputValue}"
 to="#{pageFlowScope.selectedABNumber}"/>
           <amx:actionListener id="al1"
 binding="#{bindings.processSelectedSupplier.execute}"/>
         </amx:listItem>
```

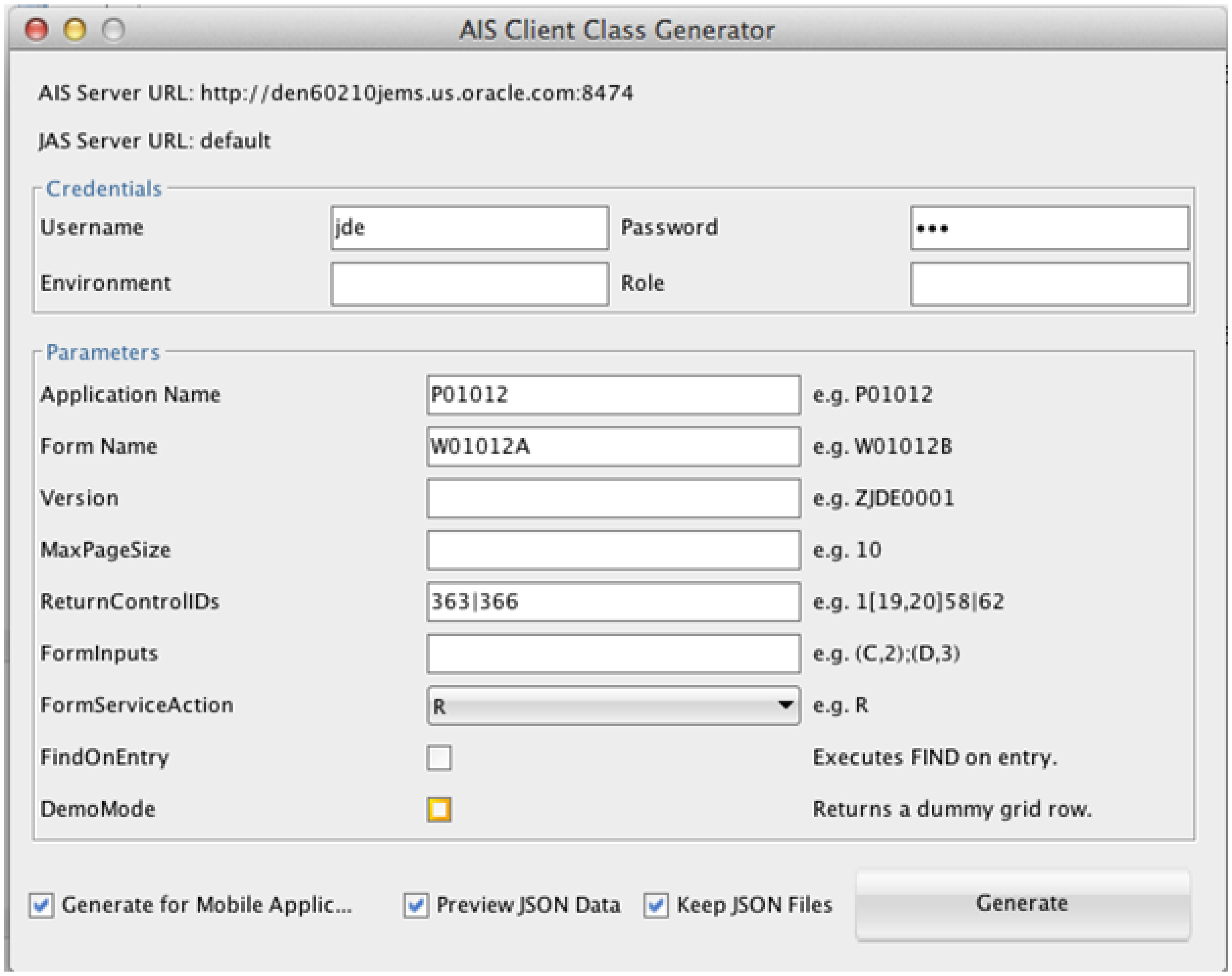
You must create objects for storing the category code data retrieved from the Address Book. Use the AIS Client Class Generator to generate the classes necessary. If you have not already installed and configured the AIS Client Class Generator, see "Configuring the AIS Client Class Generator in the *JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* .

When naming the package, make sure to use a custom package name in the configuration so there are no conflicts with existing classes from the original application:



Java Package: maa.customize.types

Category code 4 and 5 will be retrieved from the Address Book. The field IDs for these fields are 363 and 366, as shown here:



AIS Client Class Generator

AIS Server URL: http://den60210jems.us.oracle.com:8474

JAS Server URL: default

Credentials

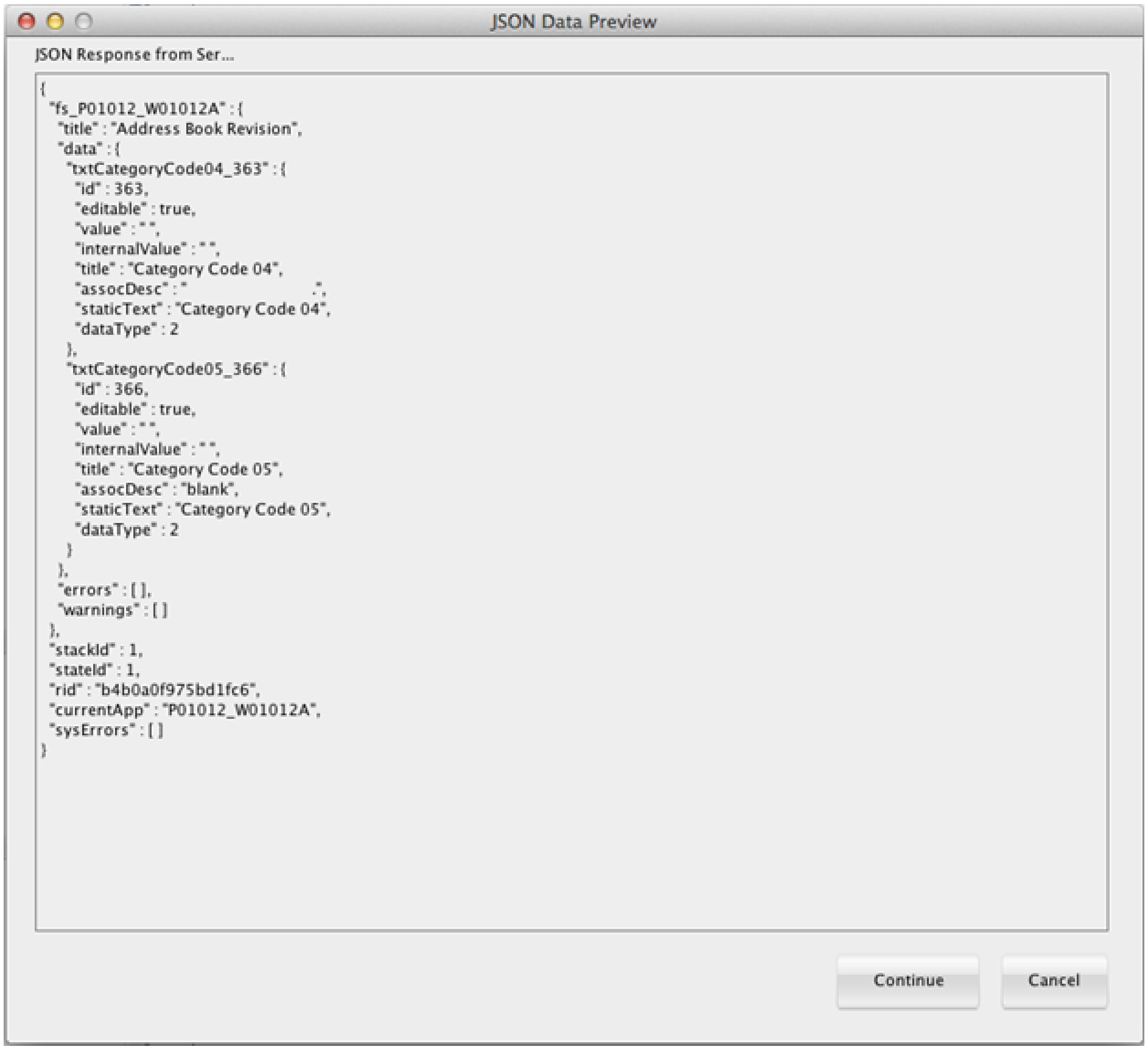
Username	jde	Password	•••
Environment		Role	

Parameters

Application Name	P01012	e.g. P01012
Form Name	W01012A	e.g. W01012B
Version		e.g. ZJDE0001
MaxPageSize		e.g. 10
ReturnControlIDs	363|366	e.g. 1[19,20]58|62
FormInputs		e.g. (C,2);(D,3)
FormServiceAction	R	e.g. R
FindOnEntry	☐	Executes FIND on entry.
DemoMode	☐	Returns a dummy grid row.

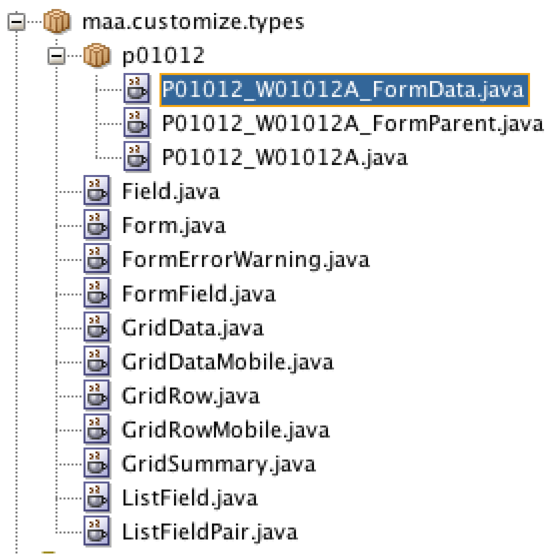
✓ Generate for Mobile Applic... ✓ Preview JSON Data ✓ Keep JSON Files

After verifying the JSON includes category codes 4 and 5, generate the classes.



```
{
 "fs_P01012_W01012A" : {
  "title" : "Address Book Revision",
  "data" : {
   "txtCategoryCode04_363" : {
    "id" : 363,
    "editable" : true,
    "value" : " ",
    "internalValue" : " ",
    "title" : "Category Code 04",
    "assocDesc" : "                 .",
    "staticText" : "Category Code 04",
    "dataType" : 2
   },
   "txtCategoryCode05_366" : {
    "id" : 366,
    "editable" : true,
    "value" : " ",
    "internalValue" : " ",
    "title" : "Category Code 05",
    "assocDesc" : "blank",
    "staticText" : "Category Code 05",
    "dataType" : 2
   }
  },
  "errors" : [ ],
  "warnings" : [ ]
 },
 "stackId" : 1,
 "stateId" : 1,
 "rid" : "b4b0a0f975bd1fc6",
 "currentApp" : "P01012_W01012A",
 "sysErrors" : [ ]
}
```

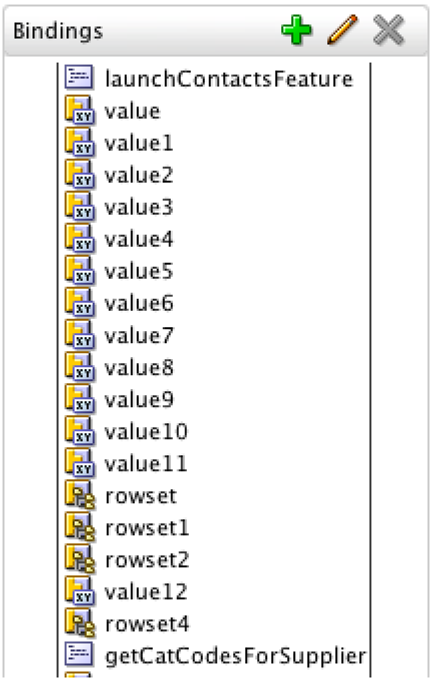
After refreshing the project, the classes are displayed, as shown here:



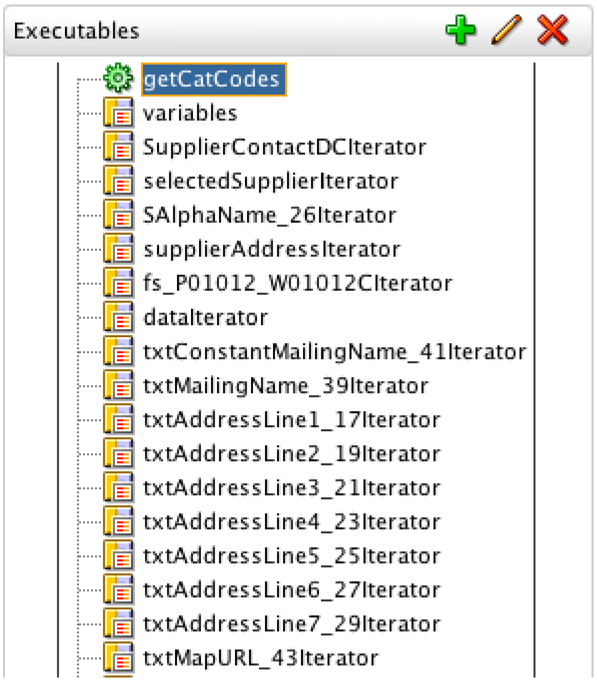
After the objects are created to hold the category code data and the selectedABNumber is set when the row is selected, the fetch for the category codes can be written. Add a new class in the ApplicationController project, in the application package. See the code example below for the content of the class. After the class is complete, create a Data Control from it.

```
package com.oracle.e1.jdemf.M010010.application;

import com.oracle.e1.jdemf.FormRequest;
import com.oracle.e1.jdemf.JDERestServiceException;
import com.oracle.e1.jdemf.JDERestServiceProvider;
import com.oracle.e1.jdemf.M010010.formservicetypes.p04012.P04012_W04012D_FormParent;
import maa.customize.types.p01012.P01012_W01012A_FormParent;
import oracle.adfmf.framework.api.AdfmfJavaUtilities;
import oracle.adfmf.framework.api.JSONBeanSerializationHelper;
import oracle.adfmf.framework.exception.AdfException;
import oracle.adfmf.java.beans.PropertyChangeListener;
import oracle.adfmf.java.beans.PropertyChangeSupport;
import oracle.adfmf.json.JSONObject;

public class ExtendAppDC {

    private P01012_W01012A_FormParent catCodeParent = new P01012_W01012A_FormParent();
    private PropertyChangeSupport propertyChangeSupport = new PropertyChangeSupport(this);

    public ExtendAppDC() {
        super();
    }

    public void setCatCodeParent(P01012_W01012A_FormParent catCodeParent) {
        P01012_W01012A_FormParent oldCatCodeParent = this.catCodeParent;
        this.catCodeParent = catCodeParent;
        propertyChangeSupport.firePropertyChange("catCodeParent", oldCatCodeParent, catCodeParent);
    }

    public P01012_W01012A_FormParent getCatCodeParent() {
        return catCodeParent;
    }

    public void getCatCodesForSupplier(){

        //value of selected address number is set in Supplier Search page when the row is selected.
        String selectedABNumber =
 (String)AdfmfJavaUtilities.evaluateELExpression("#{pageFlowScope.selectedABNumber}");

        //call P01012_W01012A form to get category codes 4 and 5
        FormRequest formRequest = new FormRequest();

        formRequest.setReturnControlIDs("21|363|366");
        formRequest.setFormName("P01012_W01012A");
        formRequest.setFormServiceAction(formRequest.ACTION_READ);
        formRequest.addToFISet("12",selectedABNumber);

        try{

        // For POST request, set data payload is header delimited with | and service input class
        JSONObject jsonObject = (JSONObject)JSONBeanSerializationHelper.toJSON(formRequest);
        String postData = jsonObject.toString();

        String response = JDERestServiceProvider.jdeRestServiceCall(postData, "POST", "formservice");

            catCodeParent =
 (P01012_W01012A_FormParent)JSONBeanSerializationHelper.fromJSON(P01012_W01012A_FormParent.class, response);

            //remove the associated description when it is a .
if(catCodeParent.getFs_P01012_W01012A().getData().getTxtCategoryCode04_363().getAssocDesc() != null &&

 catCodeParent.getFs_P01012_W01012A().getData().getTxtCategoryCode04_363().getAssocDesc().trim().equals("."))
            {
                catCodeParent.getFs_P01012_W01012A().getData().getTxtCategoryCode04_363().setAssocDesc("");

            }

            if(catCodeParent.getFs_P01012_W01012A().getData().getTxtCategoryCode05_366().getAssocDesc() != null
 &&

 catCodeParent.getFs_P01012_W01012A().getData().getTxtCategoryCode05_366().getAssocDesc().trim().equals("."))
            {
                catCodeParent.getFs_P01012_W01012A().getData().getTxtCategoryCode05_366().setAssocDesc("");

            }
        }
        catch (JDERestServiceException e)
        {
            JDERestServiceProvider.handleServiceException(e);
        }
        catch(Exception e)
        {
            throw new AdfException(e.getMessage(), AdfException.ERROR);
        }

    }

    public void addPropertyChangeListener(PropertyChangeListener l) {
        propertyChangeSupport.addPropertyChangeListener(l);
    }

    public void removePropertyChangeListener(PropertyChangeListener l) {
        propertyChangeSupport.removePropertyChangeListener(l);
    }
}
```

Next, the getCatCodesForSupplier() method is invoked from the amx executable bindings, as shown here:



launchContactsFeature
value
value1
value2
value3
value4
value5
value6
value7
value8
value9
value10
value11
rowset
rowset1
rowset2
value12
rowset4
getCatCodesForSupplier

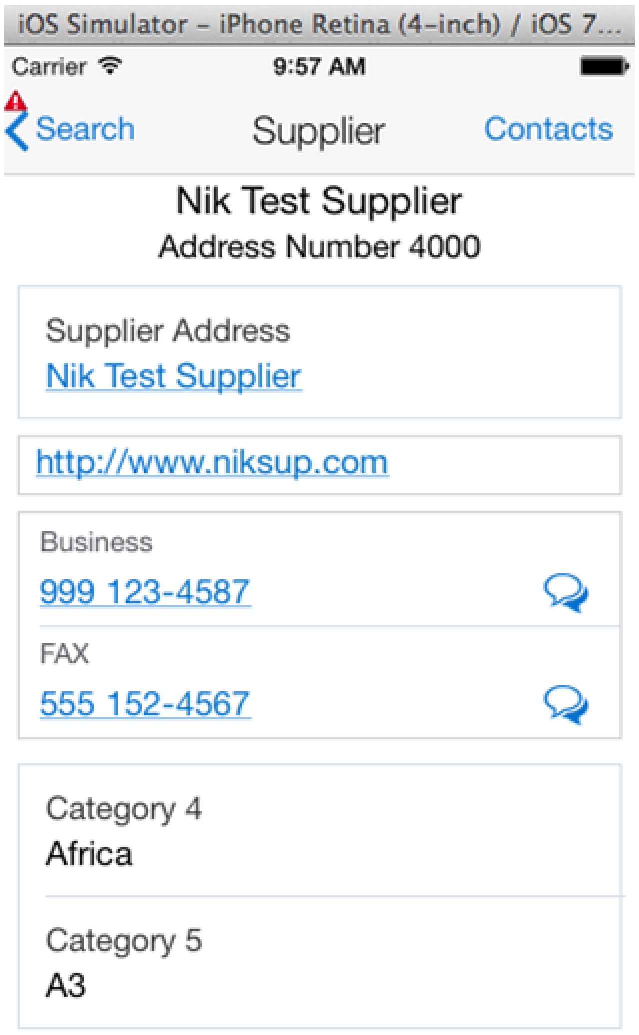


getCatCodes
variables
SupplierContactDCIterator
selectedSupplierIterator
SAlphaName_26Iterator
supplierAddressIterator
fs_P01012_W01012CIterator
dataIterator
txtConstantMailingName_41Iterator
txtMailingName_39Iterator
txtAddressLine1_17Iterator
txtAddressLine2_19Iterator
txtAddressLine3_21Iterator
txtAddressLine4_23Iterator
txtAddressLine5_25Iterator
txtAddressLine6_27Iterator
txtAddressLine7_29Iterator
txtMapURL_43Iterator

The two fields from the DataControl are added to the detail page in a panelFormLayout after the listview with the phones, as shown here:

```
</amx:listView>
      <amx:panelFormLayout labelPosition="topStart" fieldHalign="start">
      <amx:panelLabelAndMessage label="Category 4" id="plam2">
        <amx:outputText value="#{bindings.assocDesc.inputValue}" id="ot3"/>
      </amx:panelLabelAndMessage>
      <amx:panelLabelAndMessage label="Category 5" id="plam3">
        <amx:outputText value="#{bindings.assocDesc1.inputValue}" id="ot5"/>
      </amx:panelLabelAndMessage>
    </amx:panelFormLayout>
```

The associated description for each field in EnterpriseOne is used for each field value in the mobile application. The following example shows the result of customizing the mobile application to show the two category code values. The labels in this example are generic, you can make the label appropriate for what the value is in your customization:



Nik Test Supplier
Address Number 4000

Supplier Address
Nik Test Supplier

http://www.niksup.com

Business
999 123-4587

FAX
555 152-4567

Category 4
Africa

Category 5
A3

Removing Data from Pages

For each field you want to remove, set the rendered property for that field to false in the SupplierDetail.amx page. The field will not appear in the mobile application, and the space for that field will be reclaimed as if the field was never there.

Adding New Pages

You can add new forms and navigation actions, as well as a new link or button to navigate to the new forms. Refer to the Oracle MAF documentation for these types of modifications:

http://docs.oracle.com/middleware/mobile200/mobile/index.html

8 Appendix C - Troubleshooting Mobile Enterprise Applications

Login Issues

Login Fails After User Launches the Mobile Enterprise Application

If the login fails after a mobile user launches the mobile enterprise application and enters the URL to connect to the server:

- Make sure the mobile user has the correct URL. See *"Deploying the AIS Server through Server Manager" in the JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* .
- Make sure the AIS Server is up and running on the port specified in the deployment settings in Server Manager.
- If the AIS Server is running, perform the following test to confirm that it is responding to requests:

  a. In Server Manager, access the AIS Server instance.
  b. Click the **Test Connection** link.

     The resulting page shows the environment, role, and HTML Server.
  c. Verify the settings in the resulting page against the settings for the AIS Server in Server Manager. If the settings are not in synch, correct any of the settings in Server Manager, test the connection, and then restart the AIS Server instance.
- Make sure the HTML Server setting for the Allowed Hosts is configured properly. See *"Configuring the Allowed Hosts Setting for the EnterpriseOne HTML Server" in the JD Edwards EnterpriseOne Application Interface Services Server Reference Guide* for more information.
- Depending on the configuration of the AIS server that supports your organization's mobile applications, you might be required to sign into VPN on your mobile device before you can sign into a mobile application. Contact your system administrator to determine if this step is required.

Application Not Compatible with Server Error Message

After logging in, the following message appears:

"This application is not compatible with the server you are connected to."

The user will not be able to continue using the application. The administrator must upgrade the EnterpriseOne Tools release to a compatible level for the application.

For a list of the EnterpriseOne mobile enterprise applications and the minimum EnterpriseOne Tools release required to run them, see the following document on My Oracle Support (login required):

Information Center for JD Edwards EnterpriseOne Mobile Applications (Doc ID 1637232.2)

https://support.oracle.com/rs?type=doc&id=1637232.2

Other Mobile Enterprise Application Issues

Data Dictionary Item with Global Override Causes Mobile Enterprise Application to Not Work as Desired

If a mobile enterprise application references a data dictionary (DD) item in EnterpriseOne, and the customer has updated the DD item in EnterpriseOne with a global override of the DD item description, the mobile enterprise application will throw a null pointer exception or an undefined error. The result is that the mobile enterprise application will not receive values from EnterpriseOne and the application will not work as desired.

A global override of the DD item description overrides a data item's row description and is not specific to any language or Jargon Code (system code). To fix this issue, in EnterpriseOne, remove the global override of the description and specify description overrides only for a specific language or Jargon Code. See *"Understanding Jargon and Alternate Language Terms" in the JD Edwards EnterpriseOne Tools Data Dictionary Guide* for more information.

Unable to View Data or Application Features

If login is successful, but users cannot see data or application features:

- Make sure mobile users have the proper security permissions to access the EnterpriseOne mobile enterprise application.
- Make sure mobile users have the proper security permissions to access the EnterpriseOne application used by the mobile enterprise application.
- Make sure mobile users have the proper security permissions to access the data in the EnterpriseOne base application. If row security is defined that prevents users from seeing certain data in the base EnterpriseOne application, mobile users will not be able to see the data in the mobile enterprise application.

See the following topics in this guide for more information:

- *Setting Up Security for EnterpriseOne Mobile Enterprise Applications*
- *Setting Up Security for Base EnterpriseOne Applications Used by Mobile Enterprise Applications*

Unable to Work with Attachments

If you cannot work with media object attachments in a mobile enterprise application that supports attachments, you need to make sure that media object attachments are properly configured in the base EnterpriseOne application. Refer to the applicable base EnterpriseOne application documentation for more information. Use the following link to access the JD Edwards EnterpriseOne Applications Documentation Library:

http://docs.oracle.com/cd/E16582_01/index.htm