

## **Oracle® Fusion Middleware**

Mobile Developer's Guide for Oracle Application Development  
Framework

11g Release 1 (11.1.1)

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Oracle Fusion Middleware Mobile Developer's Guide for Oracle Application Development Framework 11g  
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# Preface

Welcome to *Mobile Developer's Guide for Oracle Application Development Framework*.

## Documentation Accessibility

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## Audience

This document is intended for developers of browser applications.

## Related Documents

You can also find information about ADF (Application Development Framework) in *Oracle Application Development Framework Developer's Guide*.

## Conventions

The following text conventions are used in this document:

Convention	Meaning
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.



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# Overview of Oracle Application Development Framework Mobile

This chapter provides an overview of Oracle Application Development Framework Mobile (ADF Mobile).

This chapter includes the following sections:

- [Section 1.1, "Introduction to ADF Mobile"](#)
- [Section 1.2, "Supported Mobile Browsers"](#)

## 1.1 Introduction to ADF Mobile

Oracle Application Development Framework Mobile (ADF Mobile) is a standards-based framework that enables the rapid development of enterprise mobile applications. Oracle Fusion Middleware 11g release 1 of ADF Mobile extends Oracle ADF to browsers running on mobile devices. Because ADF Mobile is built upon the component model of Java Server Faces (JSF), you can quickly develop applications for mobile browsers. ADF Mobile's mobile-specific extensions to JSF enable you to develop mobile applications using the same methodologies for developing JSF applications for the desktop.

When developing an ADF Mobile application, you need not focus on the limitations or capabilities of different browsers, as ADF Mobile enables you to develop applications that function properly on different browser types. The ADF Mobile renderer ensures that contents can be consumed correctly by the target browser. It handles the variations in both browser implementations of HTML, JavaScript, CSS, DOM, XMLHttpRequest, and in system performance. For example, if a browser does not support XMLHttpRequest and is incapable of posting a partial page request to a server, ADF Mobile's support for AJAX (Asynchronous JavaScript and XML) enables the application to revert automatically to a full page submit so that the same page functions whether the browser supports XMLHttpRequest or not.

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**Note:** For Oracle Fusion Middleware 11g release 1, ADF Mobile requires HTML and JavaScript support.

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### 1.1.1 About Java Server Faces and the Application Development Framework

Java Server Faces (JSF) is a standard specified by JSR-127 that enables developers to create applications using pre-built components that define functionality and behavior. JSF provides a clean Model-View-Controller (MVC) mechanism that simplifies the development of Web applications through its renderkit, which converts components both to and from a specific markup language. The renderkit's renderers abstract the

production of markup and responses to browser requests by generating the markup representations of components and the way in which these components should interpret browser requests.

JSF development focuses on components, not markup. Using JSF, you create a JSP page containing JSF component tags. When a user visits this page (through the FacesServlet) JSF uses the renderkit specified by the user's device to encode the markup for the appropriate output. For example, if the user's device specifies HTML for a desktop browser, then the renderkit's markup encoding results in an HTML page. In addition to rendering appropriate content, JSF supports user interaction.

Application Development Framework (ADF) is built on the standard JSF technology and provides the following:

- A large component set (since JSF provides only basic components)
- Renderers that support these components in HTML browsers, including a rich renderkit for applications using AJAX technologies
- Converters, validators, and events

### 1.1.2 Developing Mobile Applications Using ADF Mobile

You can use the same programming model and component set for developing desktop browser applications to develop mobile browser applications for mobile devices. ADF Mobile application development is almost identical to ADF Web application development, except that ADF Mobile application development uses only mobile JSF pages that consist of Apache MyFaces Trinidad components.

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**Note:** You cannot use ADF Faces components to develop an ADF Mobile application. You must use Apache MyFaces Trinidad components.

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Developing mobile browser applications for mobile devices with ADF Mobile leverages the same methodologies used in developing JSF applications for the desktop with a few specific mobile extensions. With support for over 60 Apache MyFaces Trinidad components, you can build applications with the rich component set, each of which renders appropriately for small-screen mobile devices. In this way, you can reuse the desktop browser application's model and controller layers to assemble a new view layer for mobile devices by using similar Apache MyFaces Trinidad components.

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**Note:** Oracle JDeveloper only supports the JSF page flows for ADF Mobile application development. The ADF task flow is not supported.

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#### How ADF Mobile Improves Performance

The PDA component renderers have been optimized to minimize the payload of the Web page sent to the mobile device for improved performance over wireless networks. In mobile environments with high-latency and low-bandwidth wireless networks, Partial Page Rendering (PPR) is essential in providing end-users with an efficient application. For mobile browsers supporting AJAX, ADF Mobile supports PPR for certain components to minimize the amount of data requested from the server and improve the responsiveness of the applications. See also [Section 3.1.2, "Partial Page Rendering."](#)

## 1.2 Supported Mobile Browsers

ADF Mobile supports Apache MyFaces Trinidad components on the browsers listed in [Table 1–1](#). Later versions of Trinidad can be integrated into Oracle JDeveloper and used with Oracle Fusion Middleware 11g release 1 of ADF Mobile.

**Table 1–1 Supported Browsers and Supported Mobile Features**

Browser	JavaScript Support	CSS Support	PPR Support
BlackBerry version 4.6 and later	Yes	Yes	Yes
Blackberry versions 4.2 through 4.5	No	Yes	No
Microsoft Windows Mobile 5	Yes	Yes	Yes (with nuances)
Microsoft Windows Mobile 6	Yes	Yes	Yes
Apple iPhone Safari	Yes	Yes	Yes
Nokia s60 series	Yes	Yes	No
Plain HTML (such as Opera Mini, Opera Mobile and Skyfire)	No	Yes	No



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## Configuring the ADF Mobile Environment

This chapter describes how to configure the environment for ADF Mobile applications and how to build and test ADF Mobile applications.

This chapter includes the following sections:

- [Section 2.1, "Introduction to the ADF Mobile Development Environment"](#)
- [Section 2.2, "Configuring the ADF Mobile Development Environment"](#)
- [Section 2.3, "Developing an ADF Mobile Application"](#)
- [Section 2.4, "Testing an ADF Mobile Application"](#)

### 2.1 Introduction to the ADF Mobile Development Environment

ADF Mobile application development is almost identical to ADF Web application development, except that ADF Mobile application development uses only mobile JSF pages that consist of Apache MyFaces Trinidad components.

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**Note:** Oracle JDeveloper supports only the JSF page flows for ADF Mobile application development. The ADF task flow is not supported.

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To create an ADF Mobile application:

- Configure the environment by creating an application and project.
- Add a Web project.
- Add the JSF pages using Apache MyFaces Trinidad components.

### 2.2 Configuring the ADF Mobile Development Environment

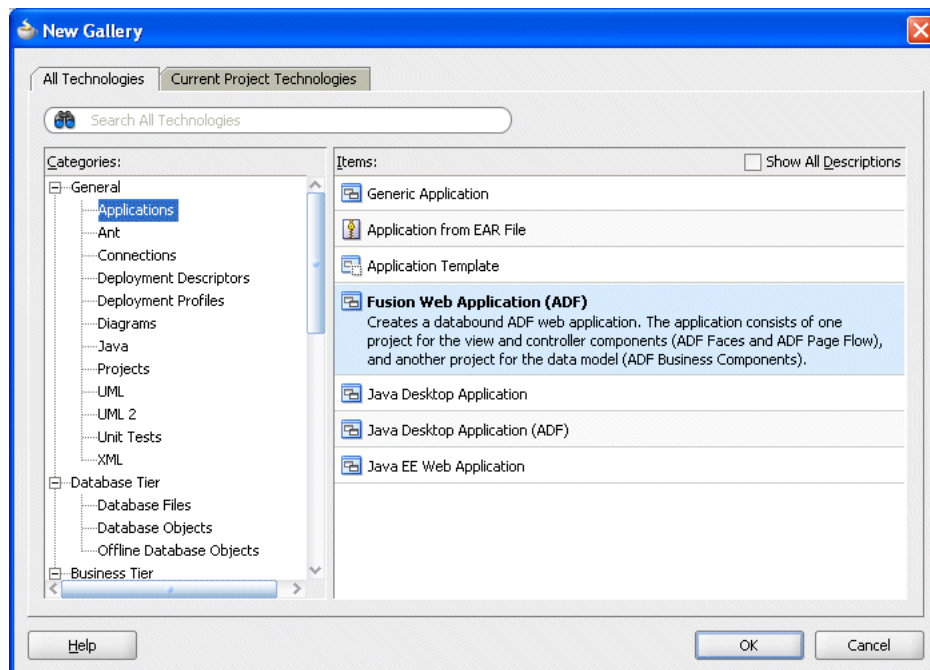
ADF Mobile application development for desktop browsers differs only from ADF Web application development for desktop browsers in the creation of the Web project. For more information, see [Section 2.3, "Developing an ADF Mobile Application."](#)

#### 2.2.1 How to Configure the Environment by Creating a Mobile Application and Project

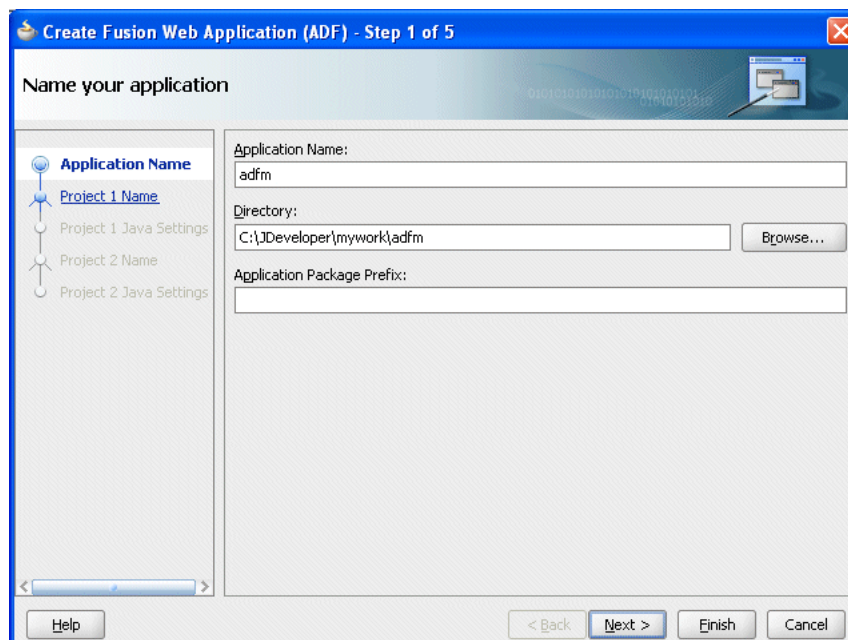
To configure the environment, first create an ADF Mobile application that includes a project with the ADF Mobile technology scope.

**To create the ADF Mobile Application and the Mobile Project**

1. Choose **File** and then **New**. The New Gallery appears ([Figure 2-1](#)).

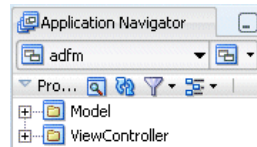
**Figure 2–1 The New Gallery**

2. Choose **Applications** in the Categories section of the window and then **Fusion Web Application (ADF)** in the Items section. Selecting **Fusion Web Application (ADF)** creates the model project used by the mobile view project.
3. Click **OK**. The Create Fusion Web Application (ADF) wizard opens to its first page, Step 1: Name your application. (Figure 2–2).
4. Complete this page by entering a name and, if needed, a location for the application in the Directory field.

**Figure 2–2 The Name your application Page**

5. Click **Finish**. The application's Model and its generated Model-View-Controller projects appear in the Application Navigator (Figure 2–3).

**Figure 2–3 The Fusion Web Application and its Projects in the Application Navigator**




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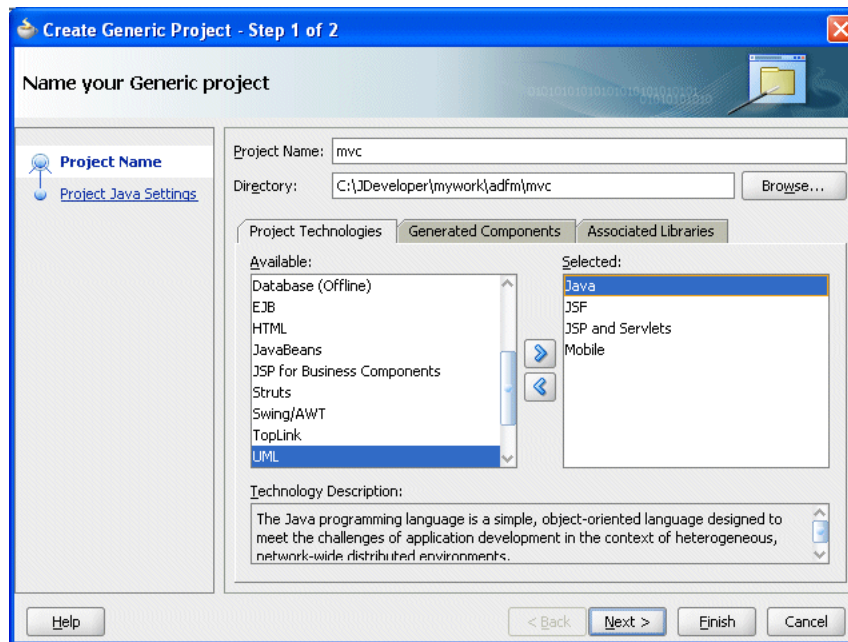
**Note:** Define the business logic for the Model project, but do not use the generated Model-View-Controller project. Instead, create a mobile Model-View-Controller project as described in the following steps.

---

6. Choose **File** and then **New**. The New Gallery appears.
7. Select **Projects** in the Categories section and then **Generic Project** in the Items section.
8. Click **OK**. The Create Generic Project wizard appears.
9. Complete the wizard by first entering a name for the project. For example, enter *mvc* (a short name for Model-View-Controller mobile).

**Tip:** To make entering a URL on a mobile device easier, enter short, lower-case names for both the application and the project.

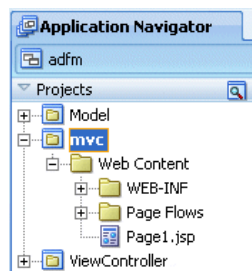
10. Select the ADF Mobile technology scope for the project by moving **Mobile** from the Available section to the Selected section. As depicted in Figure 2–4, the following technologies appear in the Selected section:
  - Java
  - JSF (JavaServer Faces)
  - JSP and Servlets
  - Mobile

**Figure 2–4 Selecting the Mobile Technology Scope**

11. Click **Next**. The Configure Java settings for the project page appears.
12. Click **Finish** to complete the project.

## 2.2.2 What Happens When You Create a Mobile Application and Project

The mobile Model-View-Controller project (*mvc*) appears in the Application Navigator (Figure 2–5) within the Fusion Web application (*adfm*).

**Figure 2–5 The Mobile ADF Model-View-Controller Project in the Application Navigator**

Because you added the Mobile technology scope, the Apache MyFaces Trinidad library is automatically loaded to the workspace and the Trinidad component palette will be loaded when you create mobile JSF pages (Figure 2–9).

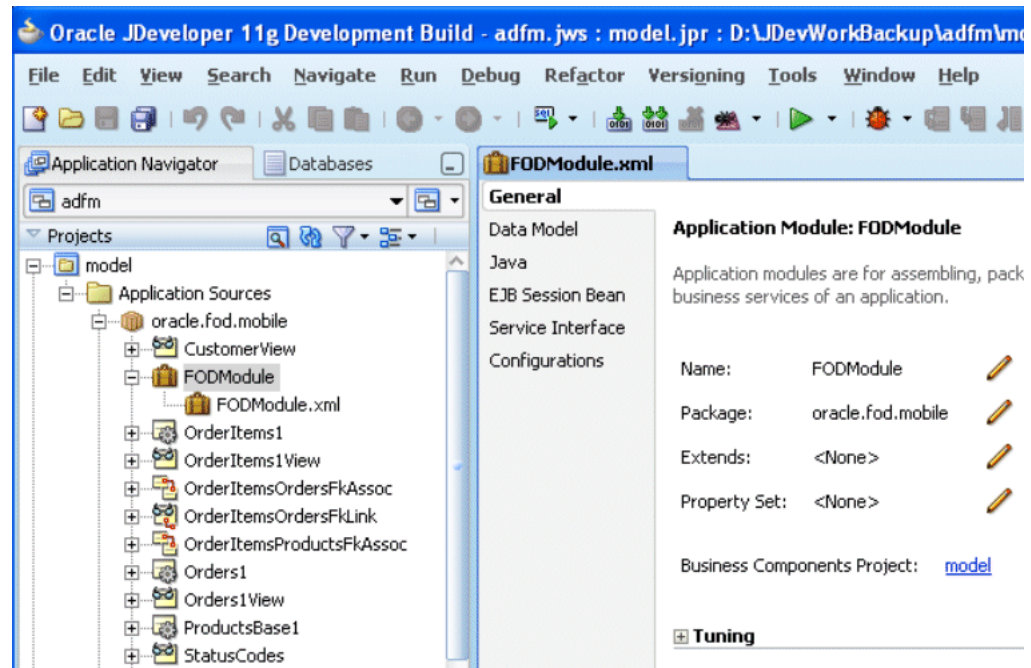
## 2.3 Developing an ADF Mobile Application

ADF Mobile application development for desktop browsers is nearly identical to ADF Web application development for desktop browsers; the two only differ in how you create the Web project. For ADF Mobile applications, you develop an ADF Mobile application by creating Web pages within the Web project. Otherwise, you develop an ADF Mobile application the same way that you develop an ADF Web application for a desktop browser. Typically, you create a Web project within the application to



implement a user interface and ADF business components or an Oracle TopLink project to implement a business layer. Figure 2–6 illustrates an ADF Mobile application (*adfm*) that contains *model*, a business components project.

**Figure 2–6 Creating a Business Components Project within an ADF Mobile Application**



### 2.3.1 How to Develop an ADF Mobile Application by Creating a Mobile JSF Page

You develop an ADF Mobile application by first creating a JSP page and then populating it with the Apache My Faces Trinidad components.

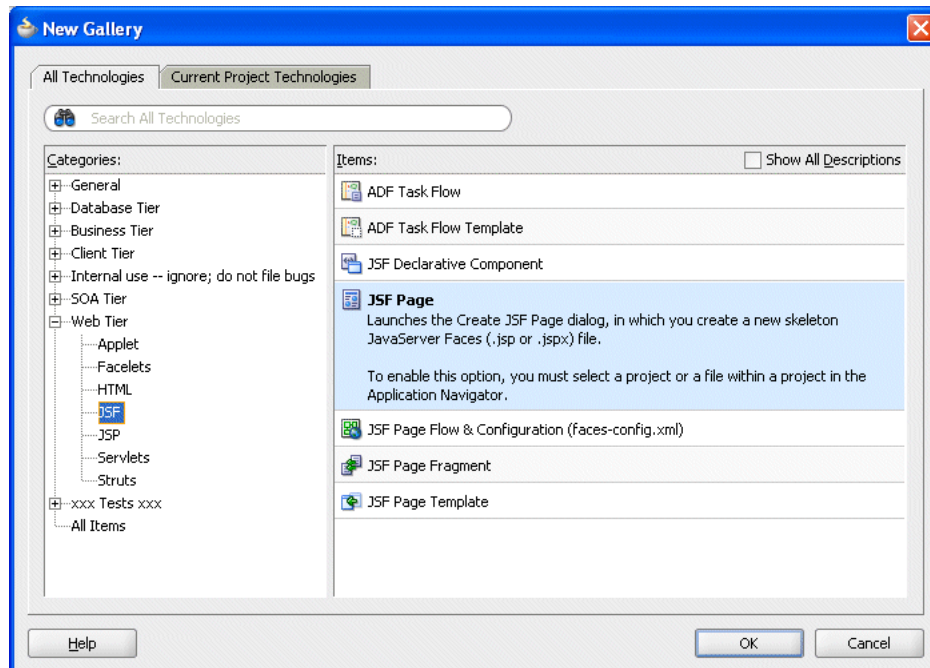
#### To create a mobile JSF page

1. Choose **File** and then **New**. The New Gallery appears.
2. Select **JSF** from the Web Tier node in the Categories section.

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**Note:** **Project Technologies** (the default) must be selected from the Filter By list.

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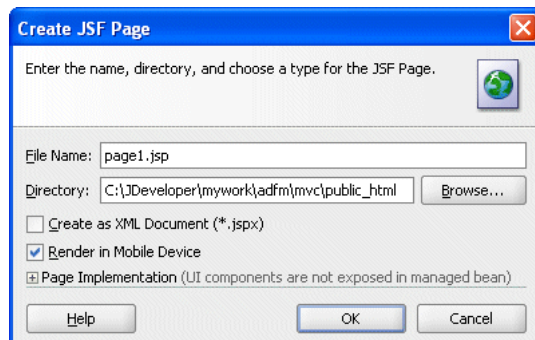
**Figure 2–7 The New Gallery for JSF Pages**

3. Select **JSF Page** in the Items section and then click **OK**. The Create JSF Page dialog box appears (Figure 2–8).

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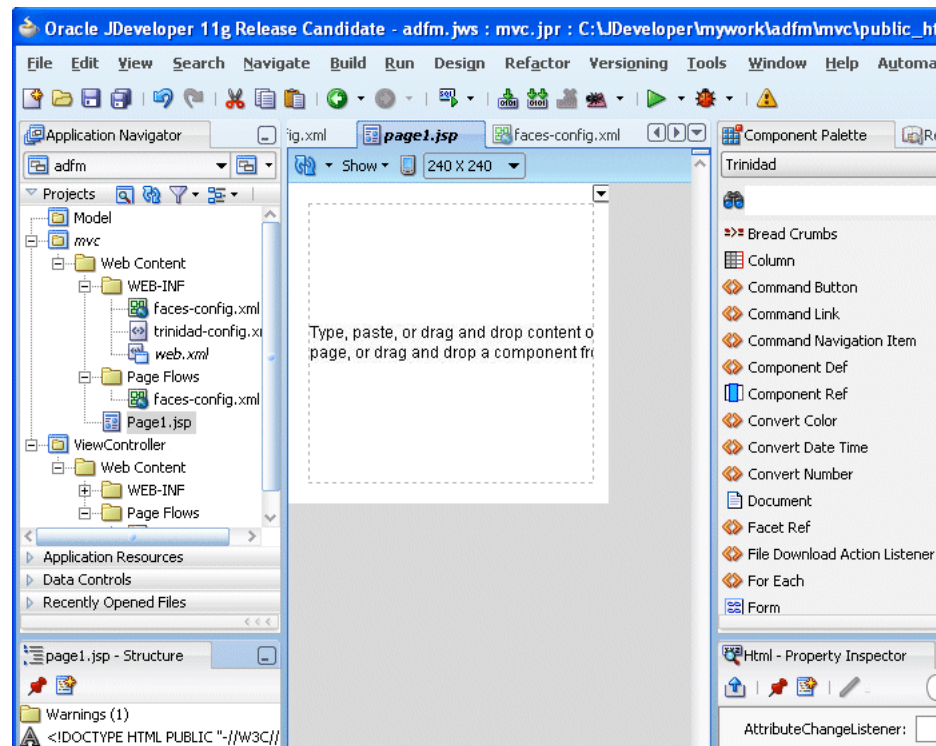
**Note:** Because you added the Mobile technology scope for the application, the **Render in Mobile Device** option is selected by default.

---

**Figure 2–8 The Create JSF Page Dialog Box**

A page designer for a mobile JSF page appears (*page1.jsp* in Figure 2–9).

4. Select the Trinidad component palette and then create the page using the Apache MyFaces Trinidad components. You can create the page in the same manner as a desktop ADF Web page.

**Figure 2–9 Using the Trinidad Component Palette**

### 2.3.2 What Happens When You Create a Mobile JSF Page

Because the **Render in Mobile Device** option is selected by default, the page designer in the visual editor reflects the size of a mobile device, as illustrated in [Figure 2–9](#).

**Tip:** You change the size of the page in the visual editor or by clicking **Tools**, then **Preferences**, then **Mobile**.

## 2.4 Testing an ADF Mobile Application

You can test an ADF Mobile application on a mobile device, a mobile device emulator, or a desktop browser. Testing on an actual mobile device or mobile device emulator provides more accurate results than does testing on a desktop browser.

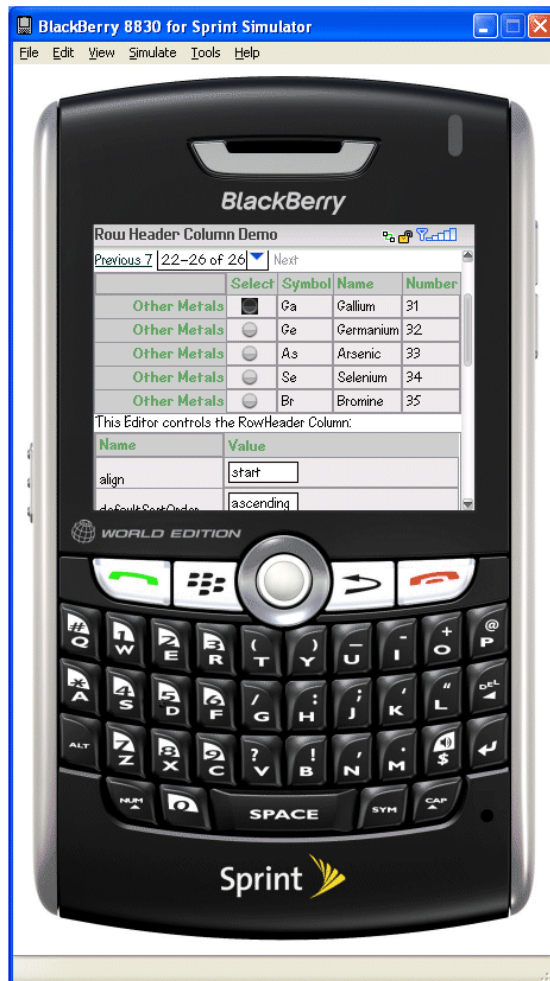
Using a desktop browser to test an ADF Mobile application produces only approximate results. Desktop browsers provide a fairly uniform testing environment: Web pages appear and behave similarly and business logic executes identically in any type of browser.

Testing an application on an actual mobile device, however, produces more accurate results, because the capabilities of mobile browsers may cause controls to behave differently than they do on a desktop browser. In addition, mobile browsers are usually smaller than desktop browsers. They also render pages differently than desktop browsers because Web servers optimize the look and feel by generating pages that are specific to the mobile browser.

Testing ADF Mobile applications directly on mobile devices has limitations as well, in that you may not have access to all of the devices that you want to test. Further, development environments behind fire walls can interfere with testing on mobile devices that access the Internet. In such cases, mobile device emulators provide an alternative testing method. For example, to test applications on BlackBerry or

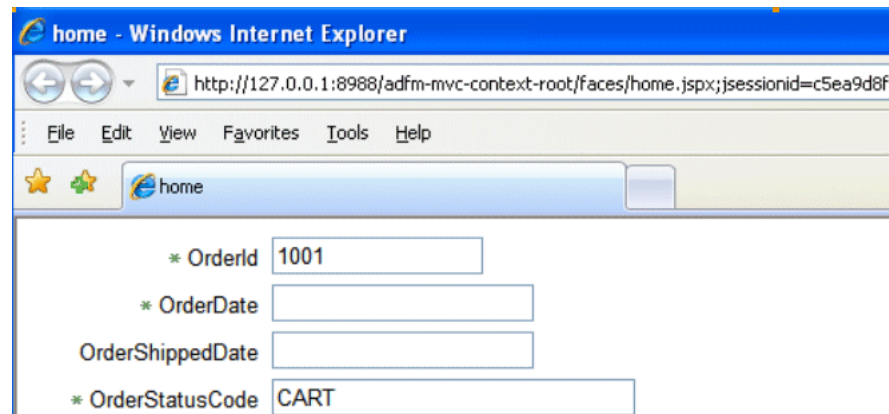
Windows Mobile emulators (Figure 2–10 and Figure 2–12, respectively), first download device emulators from the RIM developer site (<http://na.blackberry.com>) and the Microsoft developer site (<http://www.microsoft.com>). Before you test applications on the emulator, you must first configure the emulator and connect it to the Web server. The Oracle Technology Network (<http://www.oracle.com/technology/tech/wireless>) provides information on downloading and configuring simulators for ADF Mobile.

**Figure 2–10** Testing an ADF Mobile Application on a BlackBerry Emulator



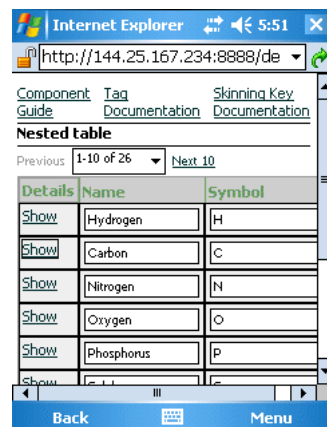
## 2.4.1 How to Test ADF Mobile Applications on Emulators

After you test an application on a desktop browser, you can then test it on an emulator. You can use the URL displayed in the desktop browser, but you must replace the local IP address with the IP address of the server that hosts the emulator. For example, to test an application using a Windows Mobile 6 emulator, change the address from the local IP used by the desktop to that of the server hosting the Windows Mobile 6 emulator.

**Figure 2–11 Testing an ADF Mobile Application on a Desktop Browser**

For example, in Figure 2–11, the desktop browser displays the IP address of the local host, 127.0.0.1. In Figure 2–12, the IP address has been changed to that of the server hosting the Windows Mobile 6 emulator (144.25.167.234).

**Tip:** To obtain the network IP address, use the `ipconfig` command interface on Windows systems and the `ifconfig` command on Linux/UNIX systems.

**Figure 2–12 Testing an ADF Mobile Application on a Windows Mobile Emulator**

In addition, you must remove the session specification that follows the page name. The page name is typically appended with either `.jspx` or `.jsp`. In Figure 2–11, the page name, `home`, is appended with `.jspx`.

In general, you debug an application by repeating cycles of code and then by testing the application. When you test an application that has been modified, you must do one or both of the following:

- Refresh the page.
- Clear the browser's cache.

**Tip:** You do not need to enter the URL again because it does not change if you develop the same application.

## 2.4.2 What You May Need to Know About Browser Settings

To view ADF Mobile applications properly requires adjustments to the browser settings for Windows Mobile and BlackBerry browsers.

### Microsoft Windows Mobile 5 and 6, Microsoft Pocket Internet Explorer

For optimal viewing, select the *Fit to Screen* view (accessed by selecting **Menu, View** and then **Fit to Screen**).

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**Note:** Do not select the *One Column* view because it causes layout problems.

---

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### RIM BlackBerry Browser 4.x

ADF Mobile only works if JavaScript support is enabled. To ensure that JavaScript support is enabled:

1. Select **Options** and then **Browser Configuration**.
2. Ensure that the following tables are selected:
  - Support JavaScript
  - Allow JavaScript Popup
  - Support HTML Tables



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## Component Support

This chapter describes the ADF Components that are supported by ADF Mobile.

This chapter includes the following sections:

- [Section 3.1, "Introduction to Apache My Faces Trinidad Components"](#)
- [Section 3.2, "Input Components"](#)
- [Section 3.3, "Output Components"](#)
- [Section 3.4, "Layout Components"](#)
- [Section 3.5, "Navigation Components"](#)
- [Section 3.6, "Data Visualization \(Graphs and Gauges\)"](#)
- [Section 3.7, "Tables and Trees"](#)
- [Section 3.8, "Unsupported Components and Attributes"](#)

### 3.1 Introduction to Apache My Faces Trinidad Components

ADF Mobile supports more than 60 of Apache MyFaces Trinidad components, enabling you to build applications with a rich component set that renders appropriately to the screens of mobile devices. For more information, refer to the Apache MyFaces Trinidad site (<http://myfaces.apache.org/trinidad/>).

#### 3.1.1 Supported Features

ADF Mobile supports the following renderer-specific features for the supported browsers:

- [Partial Page Rendering](#)
- [Dialogs](#)

#### 3.1.2 Partial Page Rendering

The high latency and low bandwidth of networks in mobile environments decrease application responsiveness for mobile users. Screens refresh slowly, diminishing the mobile user experience. ADF Mobile's support of Partial Page Rendering (PPR) compensates for the negative impact that slow connections have on screen updates by minimizing the amount of data requested from the server; using PPR, mobile device screen updates do not require a full refresh. Browsers that do not support AJAX (Asynchronous JavaScript and XML) use full page rendering instead of PPR. For example, a page submission on basic HTML browsers (which do not support JavaScript) results in the refresh of a full page.

---

---

**Note:** Browsers for BlackBerry 4.5 and earlier versions do not support PPR. Specifying the `autosubmit` attribute on certain form components results in the submission of the page after the user exits the field. A full, not partial, refresh of the page then follows.

---

---

### 3.1.3 Dialogs

ADF Mobile supports dialogs, pages used by applications to obtain user input. Because mobile browsers cannot open a new window that contains a dialog (a pop-up window), dialogs appear as new pages within the main browser window after automatically preserving the state of the current page.

### 3.1.4 Rendering Specific to the BlackBerry Browser 4.5 and Earlier Browsers

On browsers for BlackBerry 4.5 and earlier versions, the bullets in a list sublevel (such as those in a `tr:panelList` component) appear large and are not indented. The BlackBerry browser's table handling may affect complex layouts; the BlackBerry browser does not allow horizontal scrolling. Instead, it wraps a table row onto multiple display lines which may disturb the layout. For more information, see [Chapter 6, "Design Guidelines for RIM BlackBerry 4.2 to 4.5."](#)

## 3.2 Input Components

This section describes the ADF Faces core components that support user input. This section includes the following topics:

- [Creating Input Text Fields](#)
- [Creating Lists](#)

### 3.2.1 Creating Input Text Fields

You can create input fields using the following components:

- `tr:inputColor`

---

---

**Note:** Mobile browsers do not support an inline `chooseColor` or a `color` dialog for the `tr:inputColor` component.

---

---

- `tr:inputDate`
- `tr:inputHidden`
- `tr:inputText`

---

---

**Note:** Basic HTML browsers do not support the `autosubmit` attribute of the `tr:inputText` component.

---

---

### 3.2.2 Creating Lists

You can create lists using the following components:

- `tr:panelChoice`
- `tr:panelList`



- `tr:selectBooleanCheckBox`
- `tr:selectBooleanRadio`
- `tr:selectItem`

---

**Note:** Mobile browsers do not support the `disabled` attribute for the `tr:selectItem` component.

---

- `tr:selectManyCheckBox`
- `tr:selectManyListBox`
- `tr:selectOneChoice`
- `tr:selectOneListBox`
- `tr:selectOneRadio`
- `tr:resetButton`

---

**Note:** Basic HTML browsers do not support the `autosubmit` attribute for the `tr:resetButton` component.

---

## 3.3 Output Components

This section describes the Apache MyFacesTrinidad core components that support output on mobile device applications. This section includes the following topics:

- [Section 3.3.1, "Displaying Text"](#)
- [Section 3.3.2, "Displaying Images"](#)
- [Section 3.3.3, "Showing \(or Hiding\) Components"](#)

### 3.3.1 Displaying Text

The following components enable you to display text:

- `tr:iterator`
- `tr:message`
- `tr:messages`

---

**Note:** When using the `tr:message` and `tr:messages` components, the component-specific messages do not display as they do in a desktop browser. Instead, they display in the region where the message component is placed on the Web page.

---

- `tr:outputDocument`
- `tr:outputForwarded`
- `tr:outputLabel`
- `tr:outputText`

### 3.3.2 Displaying Images

The following components enable you to display images:

- `tr:icon`
- `tr:image`
- `tr:panelTip`

### 3.3.3 Showing (or Hiding) Components

The following components enable showing or hiding items:

- `tr:panelAccordion`

---

---

**Note:** Mobile browsers only support a full-page update; they do not support the `partialTriggers` attribute of the `tr:panelAccordion` component.

---

---

- `tr:panelTabbed`

---

---

**Note:** To save space on mobile devices, the renderer intentionally prevents the display of tab bars on both the top and bottom of the `tr:panelTabbed` component. Valid values for the attribute positions are `top` and `bottom`. If both is specified, then the renderer displays the tabs on top.

---

---

- `tr:showDetail`

---

---

**Note:** For the `tr:showDetail` component, the disclosure arrow does not display; instead `[+]` and `[-]` display.

---

---

- `tr:showDetailHeader`

---

---

**Note:** For the `tr:showDetailHeader` component, the disclosure arrow does not appear on mobile browsers.

---

---

- `tr:showDetailItem`

---

---

**Note:** For the `tr:showDetailItem` component, the disclosure arrow does not appear on mobile browsers and `flex` is not supported.

---

---

## 3.4 Layout Components

The following sections describes the layout components supported by ADF Mobile:

- [Section 3.4.1, "Managing the Page"](#)
- [Section 3.4.2, "Laying Out Sections of the Page"](#)
- [Section 3.4.3, "Inserting Spaces"](#)

### 3.4.1 Managing the Page

The following components enable you to manage the page:

- `tr:document`
- `tr:form`

---

**Note:** Mobile browsers do not support the `defaultCommand` attribute of the `tr:form` component.

---

- `tr:page`

---

**Note:** Mobile browsers do not support the `tr:page` facet of the `tr:page` component.

---

### 3.4.2 Laying Out Sections of the Page

The following ADF Faces core tags support page layout for mobile device applications:

- `tr:group`
- `tr:panelBorderLayout`

---

**Note:** Only the `top` and `bottom` facets are supported for the `tr:panelBorderLayout` component. Mobile browsers do not support the following facets:

- `left`
- `right`
- `start`
- `end`
- `innerLeft`
- `innerRight`
- `innerStart`
- `innerEnd`

The `tr:panelBorderLayout` component does not render if you use any of these unsupported facets.

---

- `tr:panelBox`
- `tr:panelFormLayout`
- `tr:panelGroupLayout`
- `tr:panelHeader`
- `tr:panelHorizontalLayout`

---

**Note:** Mobile devices do not support the `halign=end` in the `tr:panelHorizontalLayout` component.

---

- `tr:panelLabelAndMessage`
- `tr:panelPage`
- `tr:panelPageHeader`

---

**Note:** Mobile devices only support the following facets of the `tr:panelPageHeader` component:

- `branding`
  - `brandingApp`
  - `navigation1`
  - `navigation2`
- 

- `tr:panelRadio`
- `tr:panelCaptionGroup`

### 3.4.3 Inserting Spaces

The following components control the space allocation on pages:

- `tr:separator`
- `tr:spacer`
- `tr:subform`

## 3.5 Navigation Components

The following sections describe the components that enable users to navigate to other pages of the application or to external locations.

- [Section 3.5.1, "Creating Buttons"](#)
- [Section 3.5.2, "Creating Links"](#)
- [Section 3.5.3, "Navigation Components"](#)

### 3.5.1 Creating Buttons

ADF Mobile supports the following button types:

- `tr:commandButton`

---

**Note:** Because the `text` attribute cannot display if the `icon` attribute has been set, buttons on mobile devices can have either text or an image, but not both. If you set the `disabled` attribute to `true`, then the `tr:commandButton` component with an `icon` attribute renders as a static image with no links.

---

- `tr:goButton`

See [Chapter 7, "Extending ADF Mobile Applications"](#) for information on how to use the `tr:goButton` component to integrate e-mail, telephony, and Google maps into an application.

## 3.5.2 Creating Links

ADF Mobile supports the following components for creating hyper-links:

- `tr:commandLink`

---

**Note:** Because the `tr:commandLink` component renders as an input element in basic mobile HTML browsers, its child components cannot render. For more information on input elements in basic mobile HTML browsers, see [Section 5.2, "Developing Applications for Basic HTML Mobile Browsers."](#)

---

- `tr:goLink`

See [Chapter 7, "Extending ADF Mobile Applications"](#) for information on how to use the `tr:goLink` component to integrate e-mail, telephony, and Google maps into an application.

## 3.5.3 Navigation Components

ADF mobile supports the following navigation components:

- `tr:breadcrumbs`
- `tr:commandNavigationItem`

---

**Note:** `tr:commandNavigationItem` does not render when you set the `disabled` attribute to `true` for the following:

- `tr:selectOneListBox`
  - `tr:selectOneChoice`
  - `tr:processChoiceBar`
  - `tr:navigationPane` with hint, "choice"
  - `tr:selectRangeChoiceBar`
- 

- `tr:navigationPane`

---

**Note:** `tr:navigationPane` hint = "choice" with a destination value is not supported for basic HTML browsers.

---

- `tr:train`

---

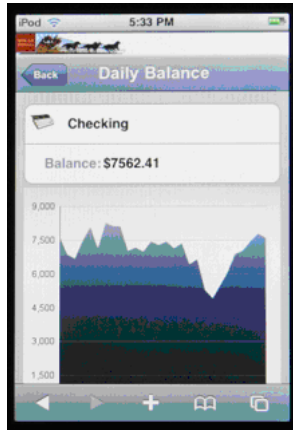
**Note:** The `tr:train` component appears as x of y instead of listing each item. This is a display-only component in ADF Mobile; users cannot navigate through the application by clicking the x of y component. To enable navigation, you must add a separate link or button.

---

## 3.6 Data Visualization (Graphs and Gauges)

ADF Mobile supports data visualization components (DVTs) used to create a wide variety of graphs and gauges in mobile application pages, such as the area graph representing a user's bank balance in [Figure 3–1](#).

**Figure 3–1** *Graph Displays in Mobile Applications*



ADF Mobile supports the following types of graphs:

- area
- bar
- bar (horizontal)
- bubble
- combination (horizontal bar and line)
- funnel
- line
- pareto
- pie
- radar
- scatter/polar
- stock

ADF Mobile supports the following types of gauges:

- dial
- status meter
- status meter (vertical)
- LED

Because Oracle JDeveloper incorporates DVTs, you can quickly add graphs and gauges. To add these components to an application, first move a data control into the editor window using a drag-and-drop operation and then select **Trinidad Gauges** or **Trinidad Graphs** from the context menu. For example, [Figure 3–2](#) illustrates the context menu that appears when a data control called *BalanceView1* is dragged and dropped into the editor window.



### 3.7.1 Creating Tables

ADF Mobile supports tables comprised of the following components:

- `tr:table`

---

---

**Note:** ADF Mobile does not support the `allDetailsEnabled` attribute for the `tr:table` component; this attribute is always set to `false`.

---

---

- `tr:column`

---

---

**Note:** When you nest `tr:column` tags to create column groups, the header facets do not render for the column groups.

---

---

### 3.7.2 Creating Trees

ADF mobile supports the `tr:tree` component.

---

---

**Note:** `tr:tree` may not render on basic HTML browsers.

---

---

## 3.8 Unsupported Components and Attributes

This section lists the components and attributes that ADF Mobile 11g does not support and includes the following sections:

- [Section 3.8.1, "Unsupported Components"](#)
- [Section 3.8.2, "Unsupported Attributes"](#)

### 3.8.1 Unsupported Components

ADF Mobile 11g does not support the following:

- `tr:chart`
- `tr:chooseColor`
- `tr:chooseDate`
- `tr:inputFile`
- `tr:inputListOFVariables`
- `tr:inputNumberSpinbox`
- `tr:legend`
- `tr:media`
- `tr:navigationTree`
- `tr:panelButtonBar`
- `tr:panelPopup`
- `tr:panelSideBar`
- `tr:poll`
- `tr:progressIndicator`



- `tr:selectManyShuttle`
- `tr:selectOrderShuttle`
- `tr:singleStepButtonBar`
- `tr:statusIndicator`
- `tr:switcher`
- `tr:treeTable`

### 3.8.2 Unsupported Attributes

ADF Mobile 11g does not support the following component attributes on any component.

- `accessKey`
- `shortDesc (tooltip)`



This chapter describes ADF Mobile Skinning.

This chapter includes the following sections:

- [Section 4.1, "Introduction to ADF Mobile Skinning"](#)
- [Section 4.2, "Implementing ADF Mobile Skinning"](#)
- [Section 4.3, "Example iPhone Components"](#)

## 4.1 Introduction to ADF Mobile Skinning

Skinning enables a page to display consistently on a variety of devices through the automatic delivery of device-dependent style sheets. These style sheets enable optimal display of pages that share the same page definitions on various mobile browsers. Within these style sheets, which enable you to set the look and feel of an application, you not only tailor a component to a specific browser by setting its size, location, and appearance, but you also specify the types of browsers on which components can be displayed or hidden. For more information, see [Section 4.2, "Implementing ADF Mobile Skinning."](#) For examples of how to use skinning, see [Section 4.3, "Example iPhone Components,"](#) which includes an example of an iPhone skin. You can apply a similar style sheet to other mobile browsers, such as BlackBerry, Windows Mobile 6, and Nokia S60. Sample implementations are available from Oracle Technology Network ([www.oracle.com/technology](http://www.oracle.com/technology)).

---

---

**Note:** Browsers must support the Cascading Style Sheet (CSS) syntax.

---

---

Features supported on specific browsers require means other than customizing style sheets.

## 4.2 Implementing ADF Mobile Skinning

To create a skin, refer to *Apache Trinidad Skinning* in the *Development Guidelines for Apache MyFaces Trinidad* (<http://myfaces.apache.org/trinidad/devguide/skinning.html>) which includes descriptions on how to:

1. Create a skin (trinidad-skins.xml, located in the either the WEB-INF or META-INF directories).
2. Create a style sheet.

3. Set the skin family in trinidad-config.xml (located in the WEB-INF directory).

## 4.2.1 How to Implement Skinning in an ADF Mobile Application

For ADF Mobile, you implement skinning by performing the following tasks:

- Within the trinidad-config.xml component, define the <skin-family> tag with an EL (Expression Language) expression that is used with a managed bean that identifies the browser type.
- Specify the renderkit and style sheet in trinidad-skins.xml
- Create a managed bean that returns the appropriate browser identifier
- Define the <managed-bean> element
- Include the CSS files within the ADF Mobile project

### 4.2.1.1 How to Define the <skin-family> in trinidad-config.xml

Add the <skin-family> tag within the <trinidad-config> element and specify an EL expression that evaluates to the string that identifies a browser type. The fragment of trinidad-config.xml illustrated in [Example 4-1](#) assumes that a phoneFamily property in a managed bean, AgentUtil, returns a string that identifies the requesting browser type.

#### **Example 4-1** Defining the Skin Family

```
<?xml version="1.0" encoding="windows-1252"?>
<trinidad-config xmlns="http://myfaces.apache.org/trinidad/config">
  <skin-family>#{AgentUtil.phoneFamily}</skin-family>
  ...
</trinidad-config>
```

### 4.2.1.2 How to Define <skin-family> in trinidad-config.xml to Enable Switching Between Skins

After you create the skin, you can switch between the default skin and another skin, such as an iPhone skin as illustrated in [Example 4-2](#) using the <skin-family> element in Trinidad-config.xml. This component, which is located within WEB-INF (illustrated in [Figure 4-1](#)), enables you to set the default skins for an application. To switch between the default skin and an alternate skin, use Expression Language (EL).

#### **To enable switching between skins**

1. Open the Trinidad-config.xml file.
2. Define the EL expression in the <skin-family> element as illustrated in [Example 4-2](#), which shows switching between the default (minimal) and iPhone skins.

#### **Example 4-2** Setting an Alternative Skin

```
<trinidad-config xmlns="http://myfaces.apache.org/trinidad/config">
  <skin-family>
    #{agentUtil.isiPhone ? 'iphoneFamily':'minimal'}
  </skin-family>
</trinidad-config>
```

3. Save the file.

## 4.2.2 How to Specify the Renderkit and Style Sheet Name in trinidad-skins.xml

Under <skins>, define the <skin> tags that specifies the render-kit-id and style-sheet-name (org.apache.myfaces.trinidad.desktop and iPhone/iPhone.css, respectively in [Example 4-3](#)) for browser types identified in <family>. The value of <family> is the result string from the EL expression in <skin-family> tag in trinidad-config.xml (illustrated in [Example 4-1](#)).

### Example 4-3 Defining the Skins

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<skins xmlns="http://myfaces.apache.org/trinidad/skin">
<skin>
  <id>iphone</id>
  <family>iphoneFamily</family>
  <render-kit-id>org.apache.myfaces.trinidad.desktop</render-kit-id>
  <style-sheet-name> iPhone/iPhone.css </style-sheet-name>
</skin>
<skin>
  <id>symbian</id>
  <family>symbianFamily</family>
  <render-kit-id>org.apache.myfaces.trinidad.desktop</render-kit-id>
  <style-sheet-name> symbian/symbian.css </style-sheet-name>
</skin>
<skin>
  <id>windowsMobile</id>
  <family>windowsFamily</family>
  <render-kit-id>org.apache.myfaces.trinidad.pda</render-kit-id>
  <style-sheet-name> windowsMobile/windowsMobile.css </style-sheet-name>
</skin>
<skin>
```

## 4.2.3 How to Create a Managed Bean that Implements an Agent Parser

The managed bean illustrated in [Example 4-4](#) parses User-Agent in the request header and returns appropriate browser identifier for the request. This managed bean must also be included in faces-config.xml. For more information, see [Section 4.2.4, "How to Add the Managed Bean to faces-config.xml."](#)

### Example 4-4 A Managed Bean Implementing an Agent Parser

```
package Model;

import javax.faces.context.FacesContext;
import javax.servlet.http.HttpServletRequest;

public class AgentUtil {
  private String phoneFamily;
  private String BLACKBERRYBOLD_SKIN = "blackberryFamily";
  private String IPHONE_SKIN = "iphoneFamily";
  private String WINDOWS_FAMILY = "windowsFamily";
  private String SYMBIAN_SKIN = "symbianFamily";
  private String DEFAULT_SKIN = "minimal";

  public AgentUtil() {
  }

  /**
   * Used for skinning. Can be used in page definition for
```

```

        * agent specific rendering.
        */
    public String getPhoneFamily() {
        FacesContext fc = FacesContext.getCurrentInstance();
        HttpServletRequest req =
            (HttpServletRequest)fc.getExternalContext().getRequest();
        String agent = req.getHeader("User-Agent");
        if (agent != null && agent.indexOf("iPhone") > -1) {
            return IPHONE_SKIN;
        } else if (agent != null && agent.indexOf("Symbian") > -1) {
            return SYMBIAN_SKIN;
        } else if (agent != null && agent.indexOf("iPhone") > -1) {
            return IPHONE_SKIN;
        } else if (agent != null && agent.indexOf("BlackBerry9000") > -1) {
            return BLACKBERRYBOLD_SKIN;
        } else if (agent != null && agent.indexOf("Windows CE") > -1) {
            return WINDOWS_FAMILY;
        } else {
            return DEFAULT_SKIN;
        }
    }

    public void setPhoneFamily(String phoneFamily) {
        this.phoneFamily = phoneFamily;
    }
}

```

#### 4.2.4 How to Add the Managed Bean to faces-config.xml

Include the managed bean in faces-config.xml (AgentUtil, illustrated in [Example 4-5](#)).

##### **Example 4-5** faces-config.xml

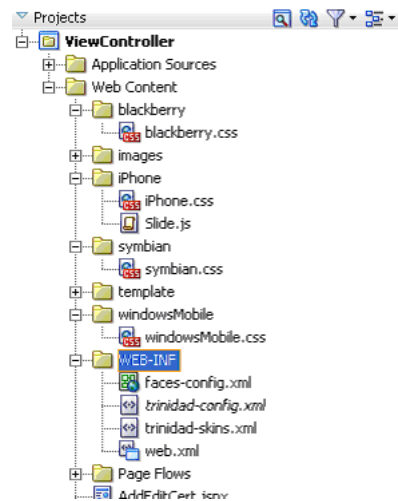
```

<faces-config>
    ...
    <managed-bean>
        <managed-bean-name>AgentUtil</managed-bean-name>
        <managed-bean-class>Model.AgentUtil</managed-bean-class>
        <managed-bean-scope>request</managed-bean-scope>
    </managed-bean>
</faces-config>

```

#### 4.2.5 How to Add the CSS Files to the ADF Mobile Application Project

Include all of the CSS files (such as blackberry.css and iphone.css in [Figure 4-1](#)) in the View-Controller project as specified in trinidad-skins.xml.

**Figure 4–1 CSS Files in the ADF Mobile Project**

## 4.2.6 What Happens at Runtime

The EL expressions defined within `<skin-family>` enable the retrieval of the skin appropriate to the browser type.

## 4.3 Example iPhone Components

CSS 3.0 features enables a Web application to have the same look and feel as a native iPhone application. By creating a new skin in Trinidad for iPhone, you can include iPhone-specific components. Examples of these components include:

- Header
- Navigation Panel
- Field Set

These components illustrate how to apply style classes and how to define style classes using the `styleClass` attribute.

### 4.3.1 How to Create Headers in iPhone Applications

The `backButton`, `toolBar`, `toolBar > h1`, and `button` style classes used with the `<tr:panelHeader>` and `<tr:commandLink>` components set the appearance of the Header (Figure 4–2).

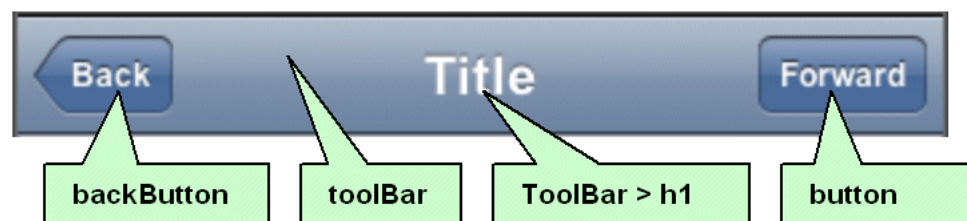
**Figure 4–2 The Header Component**

Table 4–1 lists the tags used to build headers, the style classes that you define within them, and the layout effects of these classes.

**Table 4–1 Header Component Classes**

Tag	Style Class	Layout Effects
<tr:panelHeader>	<a href="#">toolbar</a> , <a href="#">toolbar &gt; h1</a>	Sets the height, width, border and background of the header
<tr:commandLink>	<a href="#">backButton</a>	Sets the width, height, color, and position of the back button in the header
<tr:commandLink>	<a href="#">button</a>	Sets the width, height, color, and position of the button in the header

**toolbar**

[Example 4–6](#) illustrates the `toolbar` style class, which sets the height, width, border, and background for the header.

**Example 4–6 The toolbar Style Class**

```
.toolbar {
    box-sizing: border-box !important;
    -webkit-box-sizing: border-box !important;
    -moz-box-sizing: border-box !important;
    border-bottom: 1px solid #2d3642 !important;
    border-top: 1px solid #000000 !important;
    padding: 10px !important;
    height: 45px !important;
    background: url(/images/toolbar.png) #6d84a2 repeat-x !important;
    display: block !important;
}
```

**toolbar > h1**

[Example 4–7](#) illustrates the `toolbar > h1` style class, which sets the height, width, font size, and style of the toolbar title.

**Example 4–7 The toolbar > h1 Style Class**

```
.toolbar > h1 {
    position: absolute !important;
    overflow: hidden !important;
    left: 50% !important;
    margin: 1px 0 0 -75px !important;
    height: 45px !important;
    font-size: 20px !important;
    width: 150px !important;
    font-weight: bold !important;
    text-shadow: rgba(0, 0, 0, 0.4) 0px -1px 0 !important;
    text-align: center !important;
    text-overflow: ellipsis !important;
    white-space: nowrap !important;
    color: #FFFFFF !important;
    border-bottom: none !important;
}
```

**button**

[Example 4–8](#) illustrates the `button` style class, which sets the width, height, color, and position of a button in the header.



**Example 4-8 The button Style Class**

```
.button {
    position: absolute !important;
    overflow: hidden !important;
    top: 8px !important;
    right: 6px !important;
    margin: 0 !important;
    border-width: 0 5px !important;
    padding: 0 3px !important;
    width: auto !important;
    height: 30px !important;
    line-height: 30px !important;
    font-family: inherit !important;
    font-size: 12px !important;
    font-weight: bold !important;
    color: #FFFFFF !important;
    text-shadow: rgba(0, 0, 0, 0.6) 0px -1px 0 !important;
    text-overflow: ellipsis !important;
    text-decoration: none !important;
    white-space: nowrap !important;
    background: none !important;
    -webkit-border-image: url(/images/toolButton.png) 0 5 0 5 !important;
}
```

**backButton**

[Example 4-9](#) illustrates the backButton style class, which sets the width, height, color, and position of the back button in the header.

**Example 4-9 The backButton style class**

```
.backButton {
    position: absolute !important;
    overflow: hidden !important;
    top: 8px !important;
    left: 6px !important;
    margin: 0 !important;
    height: 30px !important;
    max-width: 45px !important;
    line-height: 30px !important;
    font-family: inherit !important;
    font-size: 12px !important;
    font-weight: bold !important;
    color: #FFFFFF !important !important;
    text-shadow: rgba(0, 0, 0, 0.6) 0px -1px 0 !important;
    text-overflow: ellipsis !important;
    text-decoration: none !important;
    white-space: nowrap !important;
    background: none !important;
    -webkit-border-image: url(/images/toolButton.png) 0 5 0 5 !important;
    padding: 0 !important;
    border-width: 0 8px 0 14px !important;
    -webkit-border-image: url(/images/backButton.png) 0 8 0 14 !important;
}
```

### 4.3.1.1 Using the styleClass Attribute to Create Header Components

[Example 4-10](#) illustrates how to define the `styleClass` attribute to create the header components.

**Example 4-10 Defining the Header Component**

```
<tr:panelHeader id = "panelHeader" styleClass="toolbar" text="Title">
  <tr:commandLink styleClass="button" text="Forward"/>
  <tr:commandLink styleClass="backButton" text="Back"/>
</tr:panelHeader>
```

## 4.3.2 How to Create Navigation Panels in iPhone Applications

There are two style classes that define the navigation panel:

- For static lists, use the `Panel List` style class. This style class displays a simple list of navigation items. It sets the width, position, and height of this list.
- For dynamic lists, use the `Table List` style class.

### 4.3.2.1 Using the Panel List Style Class to Create a Static List of Navigation Panels

You define the `Panel List` style class within a `<tr:panelList>` component, using `<tr:commandLink>` tags for each navigation item as illustrated in [Example 4-11](#).

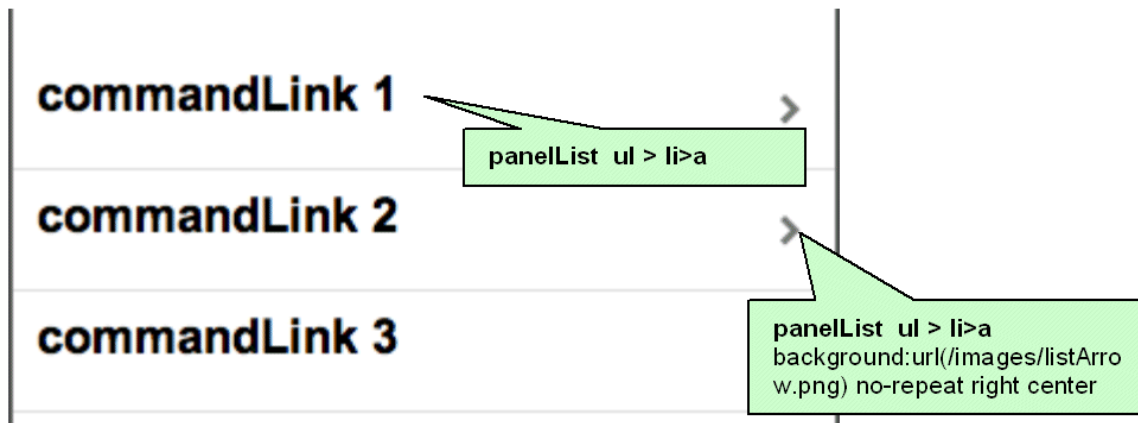
**Example 4-11 Defining a Static List of Navigation Items**

```
<tr:panelList styleClass="panelList">
  <tr:commandLink text="commandLink 1"/>
  <tr:commandLink text="commandLink 2"/>
  <tr:commandLink text="commandLink 3"/>
</tr:panelList>
```

Many CSS features are applied by default on this component when using expressions similar to the ones listed in [Table 4-2](#) on an iPhone skin ([Figure 4-3](#)).

**Table 4-2 CSS Expressions**

CSS Expression	Layout Effect
<a href="#">panelList ul</a>	Sets the width, position, and height of the list
<a href="#">panelList ul &gt; li</a>	Sets the position and border at the bottom for each item in the list
<a href="#">panelList ul &gt; li &gt; a</a>	Sets the margin, fonts size, height, and background for each navigation item defined within the <code>&lt;tr:commandLink&gt;</code> elements

**Figure 4–3 A Static List of Navigation Items****panelList ul**

[Example 4–12](#) illustrates the `panelList ul` style class, which sets the width, position and height of the list.

**Example 4–12 The `panelList ul` Style Class**

```
.panelList ul {
    position: absolute !important;
    margin: 0 !important;
    padding: 0 !important;
    left: 0 !important;
    top : 45px !important;
    width: 100% !important;
    min-height: 372px !important;
}
```

**panelList ul > li**

[Example 4–13](#) illustrates the `panelList ul > li` style class, which sets the position and border at the bottom for each item in the list.

**Example 4–13 The `panelList ul > li` Style Class**

```
.panelList ul > li {
    position:relative !important;
    margin:0 !important;
    border-bottom:1px solid #E0E0E0 !important;
    padding:8px 0 8px 10px !important;
    list-style:none !important
}
```

**panelList ul > li > a**

[Example 4–14](#) illustrates the `panelList ul > li > a` style class, which sets the margin, fonts size, height, and background for each navigation item.

**Example 4–14 The `panelList ul > li > a` Style Class**

```
.panelList ul > li > a {
    display:block !important;
    margin:-8px 0 -8px -10px !important;
```

```
padding:8px 32px 8px 10px !important;
text-decoration:none !important;
color:inherit !important;
background:url(/images/listArrow.png) no-repeat right center !important;
min-height:34px !important;
font-size:20px;
font-weight:bold;
}
```

#### 4.3.2.2 Using the Table List Style Component to Create a Dynamic List of Navigation Items

The `Table List` component enables you to build dynamic tables, such as a table that includes a list of dynamic links as illustrated by [Example 4–15](#). Because the `Table List` component is a table, it includes built-in navigation. Unlike `Panel List`, the `Table List` includes style classes for including images and detailed descriptions below the navigation items (illustrated in [Figure 4–4](#)).

##### **Example 4–15 Building a List of Dynamic Links**

```
<tr:table value="#{bindings.EmployeesView15.collectionModel}"
          var="row"
          rows="7"
          width="100%"
          styleClass = "iphoneTable"
          emptyText="#{bindings.EmployeesView15.viewable ? 'No rows yet.' :
          id="mainTable" horizontalGridVisible="false" >

  <tr:column >
    <tr:panelGroupLayout layout="vertical" styleClass="listing">
      <tr:outputText value="#{row.bindings.PhoneNumber.inputValue}"
                    styleClass="listingDetails"/>
      <tr:commandLink text="#{row.bindings.LastName.inputValue} ,
                      #{row.bindings.FirstName.inputValue} "
                    styleClass="listingLink"
                    partialSubmit="true"
                    actionListener = "#{agentUtil.gotoPage2}"
                    id="myLink1"
                    disabled="#{!bindings.Execute.enabled}"
                    onclick='iphone.slideFragments("page2",
"page1")' >
        </tr:commandLink>
        <tr:image styleClass="listingImage"
                  source="/images/326425649.png"/>
      </tr:panelGroupLayout>
    </tr:column>
  </tr:table>
```

#### **To create a table of dynamic links**

1. Create a Trinidad read-only table using data control.
2. Set the `styleClass` attribute for the table as `iphoneTable`.

The expressions listed in [Table 4–3](#) apply the needed iPhone-related CSS properties when you set the `styleClass` as `iphoneTable`.

**Table 4–3 CSS Expression**

Expression	Layout Effects
<code>.iphoneTable .af_table_content</code>	Sets the background color for the table content. It overrides the table's default outer-boarder style to none.
<code>.iphoneTable .af_table_control-bar-top</code>	Sets the background color for the table controller (pagination)
<code>.iphoneTable .af_column_cell-text</code>	Sets the background color of the column

3. Set the width of the table to 100.
4. Set the `horizontalGridVisible` attribute to false.

---

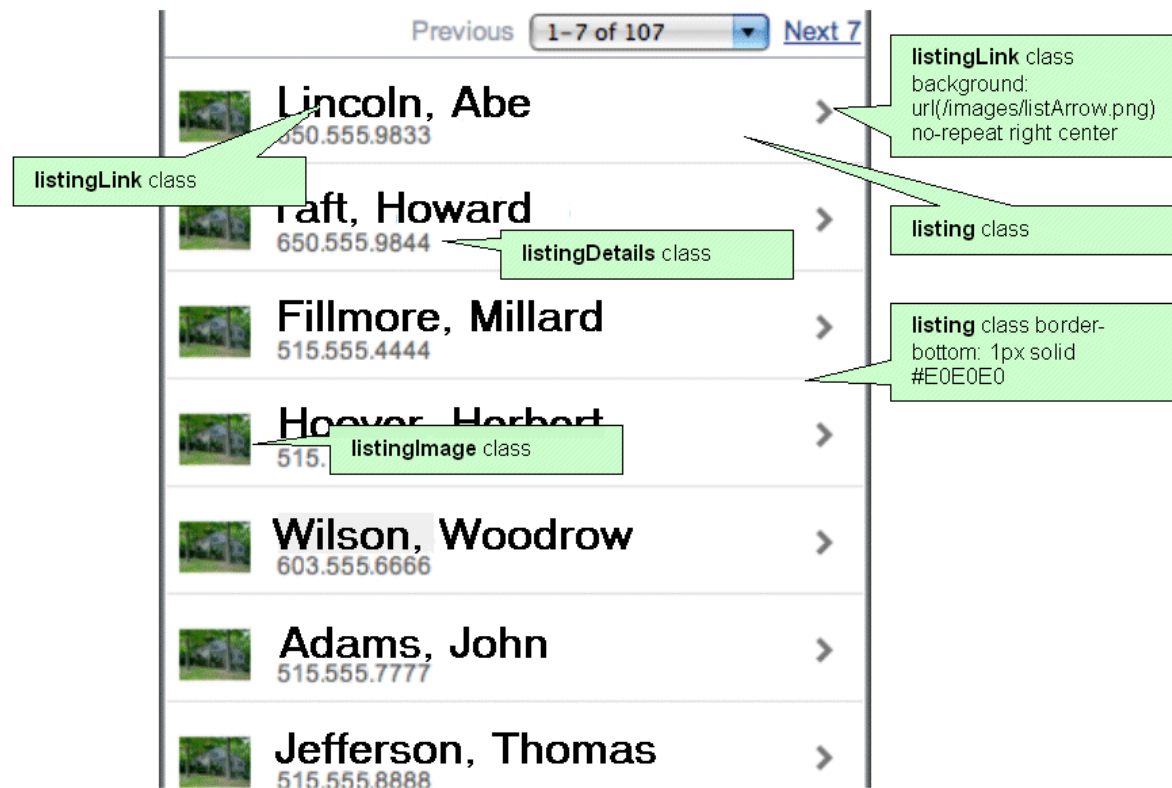
**Note:** There must be only one column within the `<tr:table>` tag. Within this column, all tags must be wrapped by a `<tr:panelGroupLayout>` component with a `styleClass` set as `listing`.

---

Table 4–4 lists the style classes used within the subelements of the `<column>` tag.

**Table 4–4 Table Listing Style Classes**

Element	Style Class	Layout Effects
<code>&lt;tr:panelGroupLayout&gt;</code> with layout attribute as vertical	<code>listing</code>	Sets the position and the border for each row
<code>&lt;tr:panelList&gt;</code>	<code>listingImage</code>	Sets the width, position, and height of the image
<code>&lt;tr:commandLink&gt;</code> : (navigation items)	<code>listingLink</code>	Sets the position, height, font size, text alignment, background image, and color of the navigation item
<code>&lt;tr:outputText&gt;</code> : (description of the navigation)	<code>listingDetails</code>	Sets the position, height, font size, text alignment, background image, and color of the navigation description

**Figure 4–4 A Listing of Dynamic Links****listing**

[Example 4–16](#) illustrates the `listing` style class, which sets the position and the border for each row.

**Example 4–16 The `listing` StyleClass**

```
.listing {
    position: relative !important;
    margin: 0 !important;
    border-bottom: 1px solid #E0E0E0 !important;
    padding: 8px 0 8px 10px !important;
    font-size: 20px !important;
    font-weight: bold !important;
    list-style: none !important;
}
```

**listingLink**

[Example 4–17](#) illustrates the `listingLink` style class, which sets the width, position, and height of the image.

**Example 4–17 The `listingLink` StyleClass**

```
.listingLink {
    display: block !important;
    margin: -8px 0 -8px -10px !important;
    padding: 8px 32px 8px 10px !important;
    text-decoration: none !important;
    color: inherit !important;
}
```

```

background: url(/images/listArrow.png) no-repeat right center !important ;
padding-left: 54px !important;
padding-right: 40px !important;
min-height: 34px !important;
font-size: 20px !important;
font-weight: bold !important;
}

```

### listingDetails

[Example 4-18](#) illustrates the `listingDetails` style class, which sets the position, height, font size, text alignment, background image, and color of the navigation item.

#### **Example 4-18 The `listingDetails` StyleClass**

```

.listingDetails {
    display: block !important;
    position: absolute !important;
    margin: 0 !important;
    left: 54px !important;
    top: 27px !important;
    text-align: left !important;
    font-size: 12px !important;
    font-weight: normal !important;
    color: #666666 !important;
    text-decoration: none !important;
    height: 13px !important;
    padding: 3px 0 0 0 !important;
}

```

### listingImage

[Example 4-19](#) illustrates the `listingImage` style class, which sets the position, height, font size, text alignment, background image, and color of the navigation description.

#### **Example 4-19 The `listingImage` Style Class**

```

.listingImage {
    display: block !important;
    position: absolute !important;
    margin: 0 !important;
    left: 6px !important;
    top: 7px !important;
    width: 35px !important;
    height: 27px !important;
    padding: 7px 0 10px 0 !important;
}

```

## 4.3.3 How to Create Detail Items in iPhone Applications

On the destination page, this component displays the detail of an item selected through panel navigation. As illustrated in [Figure 4.3](#), these details include salary, phone numbers and a hire date for a selected employee.

**Figure 4–5 Field Set**

The Destination Page - Field Set component contains one or more rows where each row contains a label or a message (which can be simple text or another navigation item). As illustrated in [Example 4–20](#), you use the `<div>` tags to create these rows. The `<div>` tags are subelements of a `<tr:panelCaptionGroup>` component.

**Example 4–20 Creating a Field Set**

```
<div class="panelBase">
  <tr:panelCaptionGroup>
    <div class="row">
      <tr:outputText styleClass="labeltext" value="#{agentUtil.name}"
        truncateAt="0"/>
      <tr:outputText styleClass="messageText"
        value="#{sessionScope.FirstName}" />
    </div>
    <div class="row">
      <tr:outputText styleClass="labeltext" value="Last Name"/>

      <tr:commandLink text="#{sessionScope.LastName}"
        styleClass="messageLink"
        partialSubmit="true"
        id="myLink2"
        actionListener="#{agentUtil.gotoPage3}"
        onclick='iphone.slideFragments("page3",
"page2");'
        />
    </div>
  </tr:panelCaptionGroup>

  <tr:panelCaptionGroup>
    <div class="row">
      <tr:outputText styleClass="labeltext" value="Email"/>
      <tr:outputText styleClass="messageText"
        value="#{bindings.LastName}@oracle.com"/>
    </div>
```



```

        <div class="row">
            <tr:outputText styleClass="labeltext" value="Salary"/>
            <tr:outputText styleClass="messageText" value="#{sessionScope.Salary}"/>
        </div>
        <div class="row">
            <tr:outputText styleClass="labeltext" value="Phone"
                truncateAt="5"/>
            <tr:outputText styleClass="messageText"
                value="#{sessionScope.PhoneId}"/>
        </div>
        <div class="row">
            <tr:outputText styleClass="labeltext" value="Hired"
                truncateAt="7"/>
            <tr:outputText styleClass="messageText"
                value="#{sessionScope.HireDate}"/>
        </div>
        <div class="row">
            <tr:outputText styleClass="labeltext" value="Phone"
                truncateAt="5"/>
            <tr:outputText styleClass="messageText"
                value="#{sessionScope.PhoneId}"/>
        </div>
        <div class="row">
            <tr:outputText styleClass="labeltext" value="Hired"
                truncateAt="7"/>
            <tr:outputText styleClass="messageText"
                value="#{sessionScope.HireDate}"/>
        </div>
        <div class="row">
            <tr:outputText styleClass="labeltext" value="Hired"
                truncateAt="7"/>
            <tr:outputText styleClass="messageText"
                value="#{sessionScope.HireDate}"/>
        </div>
    </tr:panelCaptionGroup>
</div>

```

### To Create Field Set Components

1. Insert as many `<div>` tags as needed within a `<tr:panelCaptionGroup>` component (illustrated in [Example 4-20](#)).
2. To create rows, define each `<div>` tag with the `row` class attribute. For example:

```
<div class="row">
```

The `row` attribute sets the position, height, and border for each row.

3. Within each `<div>` tag, create a label element as follows:
  - a. Create a `<tr:outputText>` tag.
  - b. Set the position, width, font, and color of the label element by defining the `StyleClass` as `labeltext`.

For example:

```
<tr:outputText styleClass="labeltext" value="Phone"
    truncateAt="5"/>
```

4. Create a message element using either the `<tr:outputText>` tag or the `<tr:commandLink>` component as follows:
  - The `<tr:outputText>` component with `styleClass` set as `messageText`. For example:

```
<tr:outputText styleClass="messageText"
               value="#{sessionScope.PhoneId}" />
```

The `messageText` style class sets the position, width, font, and color for the label element.

- [Example 4-21](#) illustrates the `<tr:commandLink>` component with `styleClass` set as `messageLink`.

**Example 4-21 Setting the styleClass Attribute as messageLink**

```
<tr:commandLink text="#{sessionScope.LastName}"
                styleClass="messageLink"
                partialSubmit="true"
                id="myLink2"
                actionListener="#{agentUtil.gotoPage3}"
                onclick='iPhone.slideFragments("page3", "page2");'
/>
```

The `messageLink` element sets the position, width, font, height, and color for the message element.

5. For a panel base background, wrap the `<div>` tags with the `panelBase` class attribute (illustrated in [Example 4-20](#)).

---

---

**Note:** The `panelBase fieldset` sets rounded edges. The `fieldset` element is added by the renderer for the `<tr:panelCaptionGroup>` component.

---

---

#### 4.3.3.1 Field Set Style Classes

This section lists the style classes for field set components and their layout properties.

##### labeltext

[Example 4-21](#) illustrates the `labeltext` style class, which sets the position, width, font, and color of the label element

**Example 4-22 The labeltext Style Class**

```
.labeltext {
    position: absolute !important;
    margin: 0 0 0 14px !important;
    line-height: 42px !important;
    font-weight: bold !important;
    color: #7388a5 !important;
    text-align: right !important;
    width: 90px !important;
    white-space: nowrap !important;
}
```

**messageText**

[Example 4-23](#) illustrates the `messageText` style class, which sets the position, width, font, and color for the message element.

**Example 4-23 The messageText Style Class**

```
.messageText {
    display: block !important;
    margin: 0 !important;
    border: none !important;
    padding: 12px 10px 0 110px !important;
    text-align: left !important;
    font-weight: bold !important;
    text-decoration: inherit !important;
    height: 42px !important;
    color: inherit !important;
    box-sizing: border-box !important;
    -webkit-box-sizing: border-box !important;
}
```

**messageLink**

```
.messageLink {
    display: block !important;
    text-align: left !important;
    text-decoration: none !important;
    color: inherit !important;
    background: url(/images/listArrow.png) no-repeat right center !important ;
    padding-top: 12px !important;
    padding-left: 111px !important;
    padding-right: 40px !important;
    min-height: 34px !important;
    font-size: 16px !important;
    font-weight: bold !important;
}
```

**panelBase**

[Example 4-24](#) illustrates the `panelBase` style class, which sets the background of the panel base.

**Example 4-24 The panelBase Style Class**

```
.panelBase {
    box-sizing: border-box !important;
    -webkit-box-sizing: border-box !important;
    padding: 10px !important;
    background: #c8c8c8 url(/images/pinstripes.png) !important;
}
```

**panelBase fieldset**

[Example 4-25](#) illustrates the `panelBase fieldset` style class, which sets rounded edges. The `<fieldset>` element is rendered by the renderer for the `<tr:panelCaptionGroup>` component.

**Example 4–25 The panelBase fieldset Style Class**

```
.panelBase fieldset {
    position: relative;
    margin: 0 0 20px 0;
    padding: 0;
    background: #FFFFFF;
    -webkit-border-radius: 10px;
    border: 1px solid #999999;
    text-align: right;
    font-size: 16px;
}
```

**row**

[Example 4–26](#) illustrates the row style class, which sets the position, height, and border for each row.

**Example 4–26 The row Style Class**

```
.row {
    position: relative !important;
    min-height: 42px !important;
    border-top: 1px solid #999999 !important;
    -webkit-border-radius: 0 !important;
    text-align: right !important;
}
```

**row:first-child**

[Example 4–27](#) illustrates the row:first-child style class.

**Example 4–27 The row:first-child style class**

```
.row:first-child {
    border-top: none !important;
}
```

## 4.3.4 What You May Need to Know About CSS Classes in iPhone Applications

Although you manually apply most of the CSS classes to specific components using the `styleClass` attribute (as in [Example 4–10](#)), some CSS features are applied by default when you use the iPhone skin.

---

## Supporting Basic HTML Mobile Browsers

This chapter describes ADF Mobile's support for basic HTML mobile browsers.

This chapter includes the following sections:

- [Section 5.1, "Introduction to Basic HTML Mobile Browser Support"](#)
- [Section 5.2, "Developing Applications for Basic HTML Mobile Browsers"](#)
- [Section 5.3, "Styling Basic HTML Mobile Browsers"](#)

### 5.1 Introduction to Basic HTML Mobile Browser Support

For Oracle Fusion Middleware 11g release 1, ADF Mobile supports mobile browsers that do not provide support for JavaScript. This lack of JavaScript support makes basic HTML mobile browsers less robust than such -supported browsers as the RIM BlackBerry or Apple iPhone. Aside from the browsers listed in [Section 1.2, "Supported Mobile Browsers,"](#) ADF Mobile considers most common browsers as basic HTML mobile browsers. ADF Mobile may not recognize certain mobile browsers, however.

#### 5.1.1 Requirements for ADF Mobile Support of Basic HTML Mobile Browsers

The minimum requirement for ADF Mobile support is XHTML Basic or the XHTML Mobile Profile that includes WAP2.x browsers.

---

**Note:** ADF Mobile does not support WAP1.x browsers that do not support XHTML Basic or the XHTML Mobile Profile.

---

### 5.2 Developing Applications for Basic HTML Mobile Browsers

Because the ADF Mobile framework serves pages to mobile browsers that are appropriate to a browser's capabilities or limitations, you do not have to create user interfaces that are specific to basic HTML mobile browsers. However, the absence of JavaScript support by these browsers limits the functionality of certain HTML elements.

- Basic HTML mobile browsers do not support the `autosubmit` attribute. Add a submit button to the form only if the form submission responds to a component's `autosubmit` feature. For composite components with built-in `autosubmit` features, ADF Mobile adds a submit button to enable users to submit the form.
- Basic HTML mobile browsers do not support form-submitting links. All submitting elements are rendered as buttons. Basic HTML mobile browsers do not support the child components of such input elements. As a consequence, the child

components of the `tr:commandLink` component cannot render in a basic HTML mobile browser. For more information on `tr:commandLink`, see [Section 3.5.2, "Creating Links."](#)

## 5.3 Styling Basic HTML Mobile Browsers

ADF Mobile provides basic CSS support for basic HTML mobile browsers. While most of these browsers support CSS, ADF Mobile applications can still run on the browsers that do not support CSS. However, without design-time considerations, the user interface may be difficult to use. Test the ADF Mobile application on as many browsers as possible.

---

## Design Guidelines for RIM BlackBerry 4.2 to 4.5

This chapter describes how to accommodate the behavior of RIM BlackBerry browsers 4.2 to 4.5.

This chapter includes the following sections:

- [Section 6.1, "Introduction to BlackBerry Browser Display Behavior"](#)
- [Section 6.2, "Formatting Tables to Prevent Wrapping"](#)
- [Section 6.3, "Formatting Label and Message Panels"](#)
- [Section 6.4, "Formatting Column Width"](#)
- [Section 6.5, "What You May Need to Know About Display Variations on BlackBerry Devices"](#)

### 6.1 Introduction to BlackBerry Browser Display Behavior

The BlackBerry browser behaves differently than many other browsers in that it does not display pages using horizontal scrolling. Instead, it fits a page to the width of the screen. This chapter presents guidelines to help you format pages to display properly on BlackBerry devices.

### 6.2 Formatting Tables to Prevent Wrapping

When formatting tables, avoid long words on lines that contain multiple fields because browsers wrap long words between fields.

---

**Note:** Within this chapter, a word refers to a series of characters. In this context, a word does not include white space.

---

Because the default mode of the BlackBerry browser limits the browser width to that of the physical screen, any field that does not fit in a line is displayed on the next line. If the intent of an application is to display multiple elements in one line, then you must ensure that the total width of the fields are within the width of the browser. Like other browsers, the BlackBerry browser wraps multiple lines when needed. The column width cannot be reduced beyond the size of the longest word in the field.

### 6.2.1 How to Prevent Fields from Wrapping in Tables

To prevent fields from wrapping, ensure that the total of the size attribute values in a table's row satisfies the following formula when all of the fields in a row are input fields.

$3 \times \text{Number of columns} + \text{the Sum of the size attributes in all columns} \leq X$ , when  $X=48$

In general, field sizes in table columns should satisfy the following formula:

$3 \times \text{Number of Columns} +$   
 $\text{Sum of size attributes in all input field columns} +$   
 $\text{Sum of number of characters in longest words in all output field columns} \leq X$ ,  
when  $X=48$

If the fields still wraps, decrease the value of  $X$  until it fits.

## 6.3 Formatting Label and Message Panels

To preserve the intended programming flexibility, `nowrap` attributes are supported and inserted when they are explicitly programmed for the Trinidad component. You may encounter problems if you add `nowrap` to a component definition when you program pages.

## 6.4 Formatting Column Width

When formatting columns, set the percentage width specification for both the label and the field in the `tr:panelFormLayout` component so that the total width is at 100%.

## 6.5 What You May Need to Know About Display Variations on BlackBerry Devices

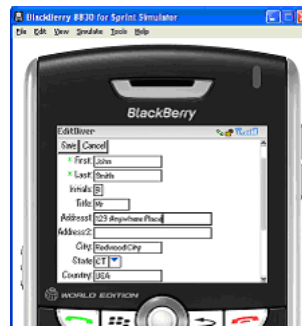
This section describes how the same application can display differently on different devices. This section includes the following topics:

- [Changing the Minimum Font Size](#)
- [Form Factor Variations](#)

### 6.5.1 Changing the Minimum Font Size

Changing the minimum font size through user preferences affects the formatting ability of the ADF Mobile renderer. For example, input fields and their corresponding labels align properly when the font is set to its default size of 6 pt. (illustrated in [Figure 6–1](#)).



**Figure 6–1 Application Display Using the Default Font Size of 6 pt.**

However, increasing the font size to 10 pt. disrupts the display by shifting the input fields beneath their corresponding labels. As a result, the page is difficult to read (Figure 6–2).

**Figure 6–2 Increasing the Font Size**

## 6.5.2 Form Factor Variations

Differing screen sizes can affect display. Even if the font size is at the default of 6 pt. (as illustrated in Figure 6–1), the same application appears differently on different devices. In Figure 6–3, the input fields barely fit the device’s screen, even though they are easily accommodated on other devices running the same application (Figure 6–1).

**Figure 6–3 Difficulty Displaying Input Fields and Labels with Font Size at 6 pt.**

In addition, input fields may display properly on the screen of one device, but may appear crowded on the screen of another type of device. In Figure 6–4, The cells of the table are not sufficiently wide, causing the text to wrap.

**Figure 6–4** *Wrapping Text*



---

## Extending ADF Mobile Applications

This chapter describes how to add functionality to ADF Mobile applications.

This chapter includes the following sections:

- [Section 7.1, "Introduction to Extending Applications for E-Mail, Telephony, and Google Maps"](#)
- [Section 7.2, "Integrating an E-Mail Client"](#)
- [Section 7.3, "Integrating Telephony"](#)
- [Section 7.4, "Integrating Google Maps"](#)
- [Section 7.5, "What You May Need to Know About Page Display Dimensions"](#)

### 7.1 Introduction to Extending Applications for E-Mail, Telephony, and Google Maps

In addition to using style sheets described in [Chapter 4, "Skinning"](#), you can further tailor an ADF Mobile application to include support for e-mail, telephony, and Google Maps. This chapter, through the following sections, describes how to use the `tr:goButton` and `tr:goLink` components to integrate links to phone numbers, e-mail addresses, and Google Maps into ADF Mobile applications.

- ["Integrating an E-Mail Client"](#)
- ["Integrating Telephony"](#)
- ["Integrating Google Maps"](#)

### 7.2 Integrating an E-Mail Client

To invoke an e-mail application from a Web application:

1. Use either the `tr:goButton` or the `tr:goLink` components.
2. Prepend the `mailto:` protocol in an HTML link.
3. Set the `destination` property to the HTML link (represented as the Expression Language statement `#{sessionScope.empDetails.Email}` in [Example 7-1](#).

**Example 7-1 Integrating the iPhone E-Mail Client using the `mailto:` Protocol**

```
<tr:goLink styleClass="messageText"
           text="#{sessionScope.empDetails.Email}"
           destination="mailto:#{sessionScope.empDetails.Email}"/>
```

## 7.2.1 Adding Mail Properties

The `mailto:` protocol enables you to add the mail properties that are listed in [Table 7-1](#).

**Table 7-1 Mail Properties**

Property	Syntax
Multiple Recipients	A comma (,) separating each e-mail address
Message Subject	<code>subject =&lt;subject text&gt;</code>
cc Recipients	<code>cc=&lt;name@address.com&gt;</code>
bcc Recipients	<code>bcc=&lt;name@address.com&gt;</code>
Message Text	<code>body=&lt;Message Text&gt;</code>

To specify these properties, append the e-mail address with question mark (?) as illustrated by `#{sessionScope.empDetails.Email}?` in [Example 7-2](#) and then add the properties, separating each with an ampersand (&).

**Example 7-2 Adding E-Mail Properties**

```
<tr:goLink styleClass="messageText"
           text="#{sessionScope.empDetails.Email}"
destination="mailto:#{sessionScope.empDetails.Email}?subject=howdy&cc=myboss@orac
le.com&bcc=me@oracle.com&body=howdy partner!"/>
```

## 7.3 Integrating Telephony

To invoke a call dialog box for a phone number displayed in the application, prepend the phone number with the `tel:` protocol in an HTML link.

---

**Note:** The phone number must support the portion of the RFC 2806 protocol (<http://www.ietf.org/rfc/rfc2806.txt>) which enables you to add pauses or dial extensions after a user dials the primary phone number. Because Apple does not specify which portions of RFC 2086 that it supports, you must test each portion.

---

In [Example 7-3](#), the EL expression, `#{sessionScope.empDetails.PhoneNumber}` represents the phone number.

**Example 7-3 Enabling the Call Dialog Box**

```
<tr:goLink styleClass="messageText"
           text="#{sessionScope.empDetails.PhoneNumber}"
destination="tel:#{ sessionScope.empDetails.PhoneNumber}"/>
```

## 7.4 Integrating Google Maps

To create a link that displays a map that shows the data available in the application, specifying the `destination` property of the `tr:goLink` component as follows:

1. Define `destination=` as the URL of Google Maps.  
(`destination=http://maps.google.com/maps`, as illustrated in [Example 7-4](#).)
2. To search for a location, append the Google Maps URL with `?q=`.
3. Define `q=` using the address string of the target location. This value can be a full street address, a city, landmark, or any item that Google Maps can search and locate. If multiple items are found, Google Maps drops multiple pins automatically.

---

**Note:** The address string must be well formatted, including commas between words. Also, replace spaces with plus sign (+) characters.

---

[Example 7-4](#) illustrates how to define the `tr:goLink` component to invoke a Google Maps application and then drop a pin on 200 Oracle Parkway.

### **Example 7-4 Specifying Locations in Google Maps**

```
<tr:goLink styleClass="messageAddrText"
           text="200 Oracle Parkway, Redwood City, CA, USA"
destination="http://maps.google.com/maps?q=200+Oracle+Parkway,+Redwood+City,+CA,+U
SA" />
```

[Example 7-5](#) illustrates specifying a location using an address represented by EL expressions.

### **Example 7-5 Specifying Locations in Google Maps Using EL Expressions**

```
<tr:goLink styleClass="messageAddrText"
           text="{sessionScope.empDetails.StreetAddress},
#{sessionScope.empDetails.City}, #{sessionScope.empDetails.StateProvince},
#{sessionScope.empDetails.CountryName}"
destination="
http://maps.google.com/maps?q=#{sessionScope.empDetails.StreetAddress},+#{sessionS
cope.empDetails.City},+#{sessionScope.empDetails.StateProvince},+#{sessionScope.em
pDetails.CountryName}" />
```

The address string, such as the one in [Example 7-4](#), must be have plus sign (+) characters rather than spaces.

### 7.4.1 Programming Driving Directions

Google Maps also supports driving directions. Modify the string following the question mark (?) in the Google Maps URL with the starting and destination addresses (`saddr=<starting address>&daddr=<destination address>`). Using this format, the directions from Oracle headquarters at 200 Oracle Parkway in Redwood City to Oracle's San Francisco office at 1 Front Street in San Francisco are as follows:

```
http://maps.google.com/maps?saddr=200+Oracle+Parkway,+Redwood+City,+CA,+USA&
daddr=1+Front+Street,+San+Francisco,+CA,+USA
```

---

---

**Note:** Apple and Google have not yet published other APIs.

---

---

### 7.4.2 Supporting Google Maps on iPhone

iPhone Safari supports both Google Maps and YouTube applications in that it automatically intercepts certain URL calls and invokes a native application rather than opening the URL using the target Web site. For example, when a user clicks an HTML link to Google Maps (<http://maps.google.com>), Safari invokes a native Google Maps application rather than navigating to the Google Maps Web site. Because the native Google maps application accepts some of the URL parameters supported by [maps.google.com](http://maps.google.com), users can specify a location and drop a pin.

## 7.5 What You May Need to Know About Page Display Dimensions

To ensure that a page displays in the correct scale, set the viewport specification in a meta tag in the header of the page. Versions 4.6 and later of BlackBerry and later support a similar meta tag. Include the following line in the header to enable the page to scale appropriately:

```
<meta name="HandheldFriendly" content="True">
```

---

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