BEA WebLogic Mobility Server

Getting Started Guide

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Introduction

About this Manual

This tutorial manual is designed to get you started with the BEA WebLogic Mobility Server™ mobility tags by stepping through a series of short, self-contained projects that will familiarize you with the mobility mark-up language.

It is recommended that you follow the steps outlined in each tutorial to create the web content; however, all of the tutorials in this manual will be imported into a tutorials Workshop project where you will be able to view the results. Any image files that are needed can also be found there.

This document is split into the following sections:

Use BEA Workshop with the Getting Started Tutorials

This section describes the steps required to import the Getting Started Tutorials into a Workshop Web Project and configure device emulators for viewing the results of the tutorials.

Introduction to the Mobility Tags

This section gives you an overview of the mobility tags used in this manual and provide instructions for running the tutorials that follow.

Create Content for PC and PDA Browsers

This section consists of a number of small, simple tutorials that introduce most of the WebLogic Mobility Server tags that form the building blocks for mobilizing your web site. Using the more familiar environment of your desktop browser, it shows you how the tags are used to organize, tailor and present your content.

Create Content for Menu-Driven Browsers

This section builds on in the previous tutorials and demonstrates the techniques involved in creating a web site that targets all devices. It describes how to organize your content and dynamically change the presentation on various devices.

PDA Pagination Using Structures

This section teaches you how use structures to automatically create navigation menus on PDA devices. You can break up large amounts of content onto multiple pages that can be easily navigated. The second part of this section shows how you can style these menus by organizing them in multi-column tables or adding images.

The "where" Attribute

Several of the mobility tags make use of the powerful "`where`" attribute which allows you to make use of the WebLogic Mobility Server built in device recognition functionality to target particular devices or device classes with content suited to their particular device characteristics.

Basic Forms

This section explains how to handle form elements in your documents.

Work with the Delivery Context API

This section demonstrates how to use the delivery context API to make JSP calls into the Device Repository in order to find out specific information about different devices.

What You Need to Know

This manual assumes you are familiar with the general concepts involved in marking up content for the web. You should be familiar with mapping the architecture of the web application with site maps and with the differences in navigation between different devices.

This documentation refers to three major classes of devices:

- Full browsers
- Menu-Driven devices
- Personal Digital Assistants (PDAs)

Full browsers are generally PC or desktop browsers that have large screens and memory capabilities and can handle large amounts of complex text, graphics and other media. They are traditionally the targets of the vast majority of web content created today. *Menu-driven devices* are normally web-enabled phones; devices that, because of their screen size, bandwidth and memory restrictions, are reliant on content being delivered in smaller chunks connected through a hierarchy of navigational links. Their mark-up language can be Wireless Mark-up Language (WML) or Extensible Hypertext Mark-up Language Mobile Profile (XHTML-MP). *PDAs* fall somewhere in between the other two device classes as far as their ability to receive and display content. Content authors have slightly more flexibility in deciding how to organize content for these types of mobile devices. These devices often use HTML 3.2 as their mark-up language.

Software Required

To work with the demos using BEA WebLogic Workshop, you will need a BEA WebLogic server running WebLogic Mobility Server and a properly configured BEA Workshop environment (for example, with configured emulators, and so on). For information on how to learn how to use BEA Workshop with the Getting Started Tutorials, including importing the tutorials, configuring the Device Repository, and configuring device emulators, see the next section, “Use BEA Workshop with the Getting Started Tutorials”.

Use BEA Workshop with the Getting Started Tutorials

To be able to see the results of the tutorials in this manual, you will need to create a new Workshop Domain and import the tutorials as a project into the domain. This section describes creating a BEA Workshop Domain, creating a new application, and then importing the provided tutorials as a project into the newly created domain.

Create MobilityTutorials Domain

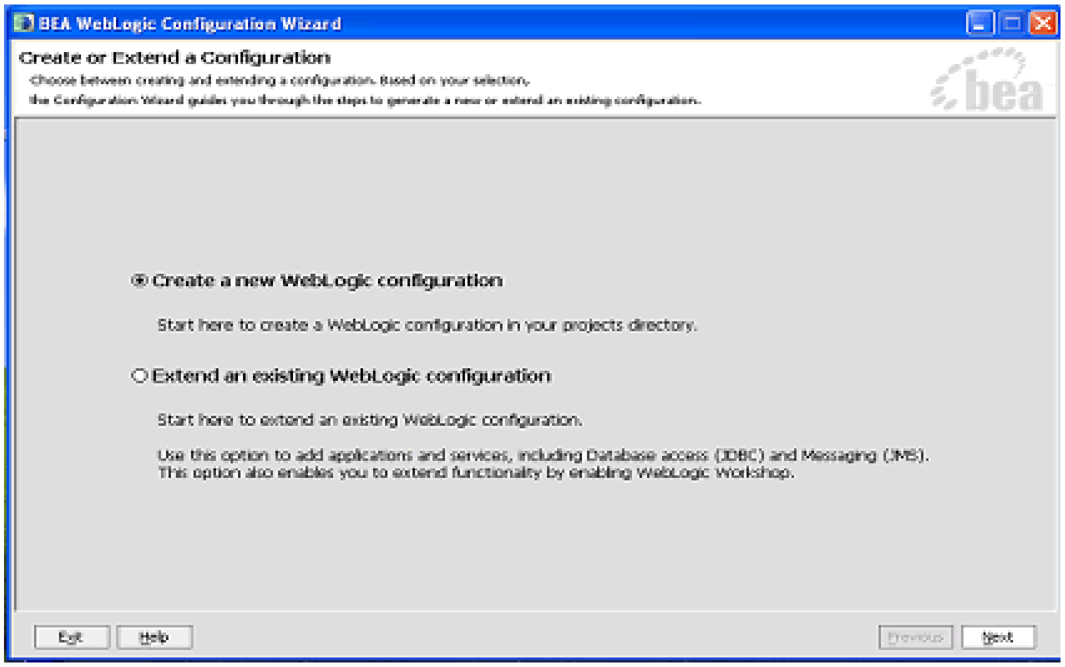
To create the MobilityTutorials Domain:

1. Launch the BEA WebLogic Configuration wizard from the Windows Start menu. Choose **Start** → **Programs** → **<BEA install directory>** → **Configuration Wizard**.

   If you have BEA Workshop open, you can also launch it from the tools menu. Choose **Tools** → **WebLogic Server** → **Configuration Wizard**.

2. The “Create or Extend a Configuration“ screen is displayed.

   Configuration Wizard – Create a new WebLogic Configuration



BEA WebLogic Configuration Wizard

Create or Extend a Configuration

Choose between creating and extending a configuration. Based on your selection, the Configuration Wizard guides you through the steps to generate a new or extend an existing configuration.

[✓ Create a new WebLogic configuration]

Start here to create a WebLogic configuration in your projects directory.

Extend an existing WebLogic configuration

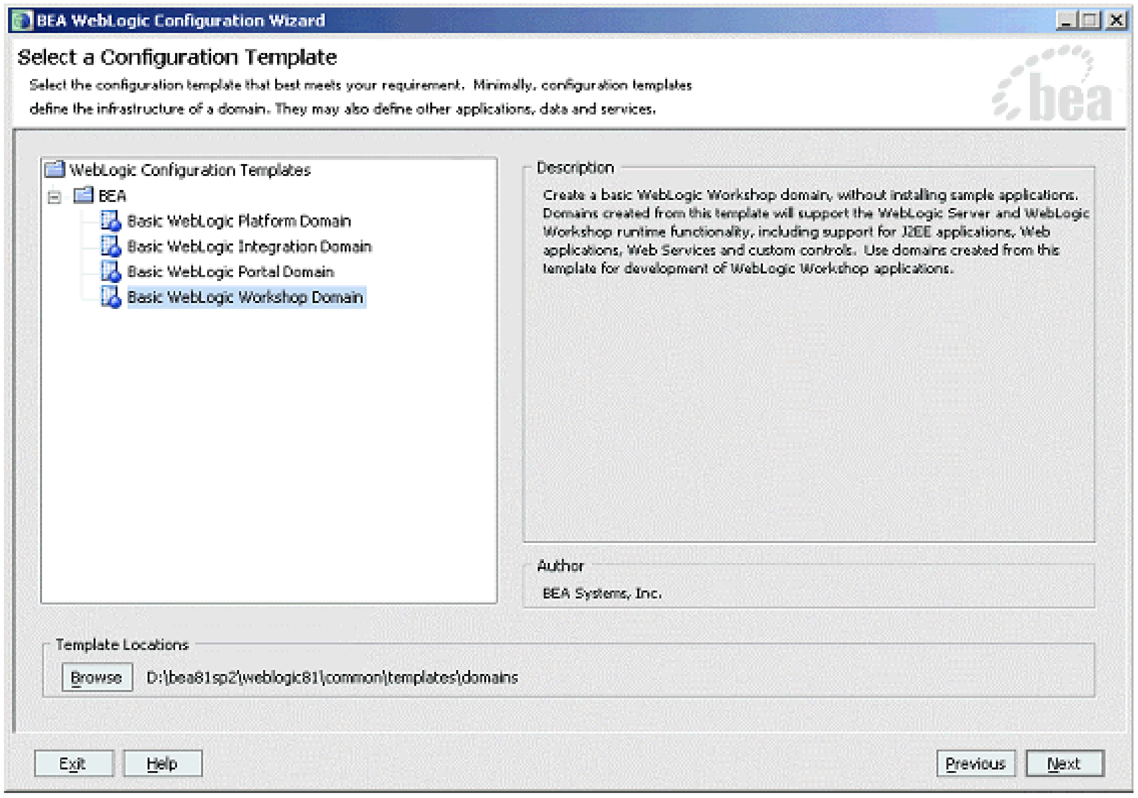
Start here to extend an existing WebLogic configuration.

Use this option to add applications and services, including Database access (JDBC) and Messaging (JMS). This option also enables you to extend functionality by enabling WebLogic Workshop.

3. Select **Create a new WebLogic configuration** and click **Next**.

4. The "Select a Configuration Template" screen is displayed.

   Configuration Wizard – Basic WebLogic Workshop Domain


BEA WebLogic Configuration Wizard
WebLogic Configuration Templates
BEA
Basic WebLogic Platform Domain
Basic WebLogic Integration Domain
Basic WebLogic Portal Domain
Basic WebLogic Workshop Domain
Description
Author
Template Locations
Browse
Exit
Help
Previous
Next

Select a Configuration Template

Select the configuration template that best meets your requirement. Minimally, configuration templates define the infrastructure of a domain. They may also define other applications, data and services.

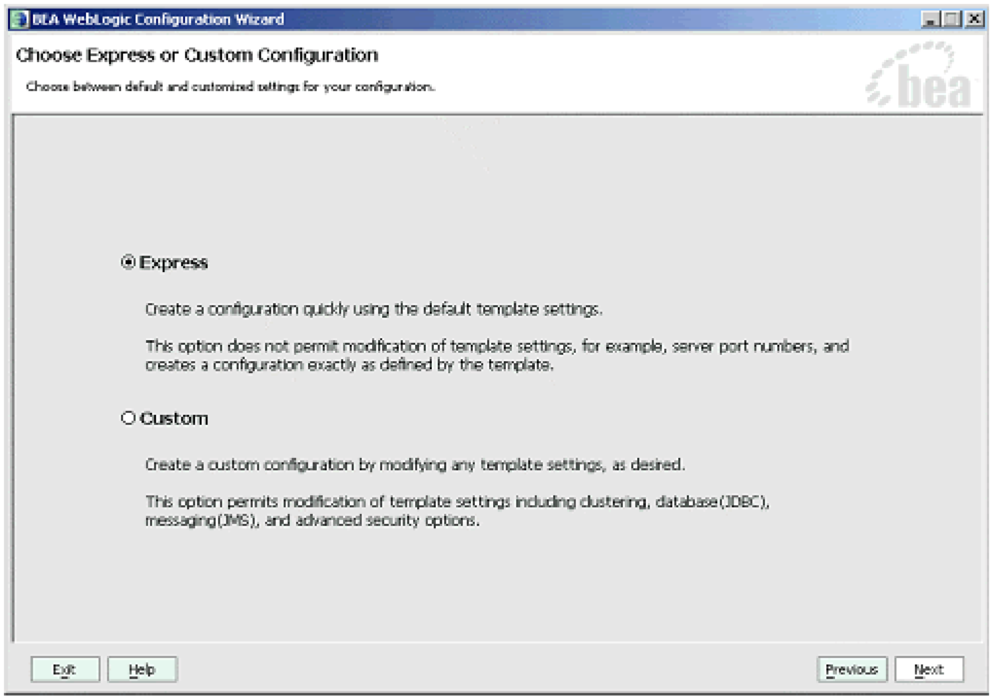
Create a basic WebLogic Workshop domain, without installing sample applications. Domains created from this template will support the WebLogic Server and WebLogic Workshop runtime functionality, including support for J2EE applications, Web applications, Web Services and custom controls. Use domains created from this template for development of WebLogic Workshop applications.

BEA Systems, Inc.

D:\bea81sp2\weblogic81\common\templates\domains

5. Select **Basic WebLogic Workshop Domain** and click **Next**.
6. The "Choose Express or Custom Configuration" screen is displayed.

Configuration Wizard – Express Configuration



Choose Express or Custom Configuration

Choose between default and customized settings for your configuration.

[✓ Express]

Create a configuration quickly using the default template settings.

This option does not permit modification of template settings, for example, server port numbers, and creates a configuration exactly as defined by the template.

Custom

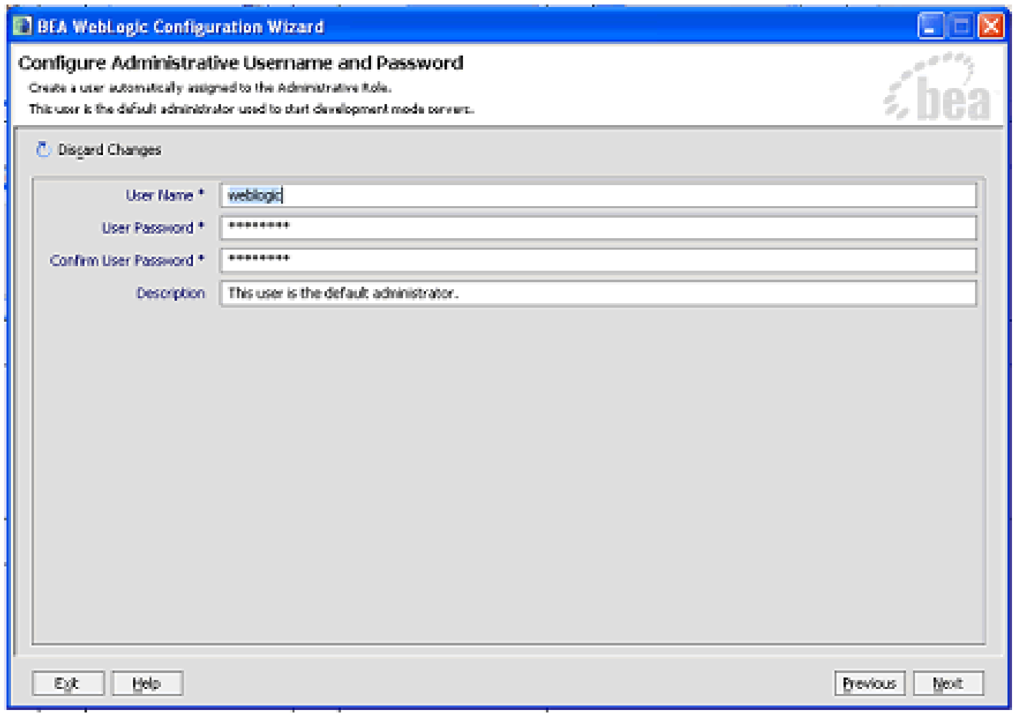
Create a custom configuration by modifying any template settings, as desired.

This option permits modification of template settings including clustering, database(JDBC), messaging(JMS), and advanced security options.

7. Select **Express** and click **Next**.

8. The “Configure Administrative Username and Password” screen is displayed.

   Configuration Wizard – User Name and Password



Configure Administrative Username and Password

Create a user automatically assigned to the Administrative Role.

This user is the default administrator used to start development mode servers.

User Name * weblogic

User Password * *********

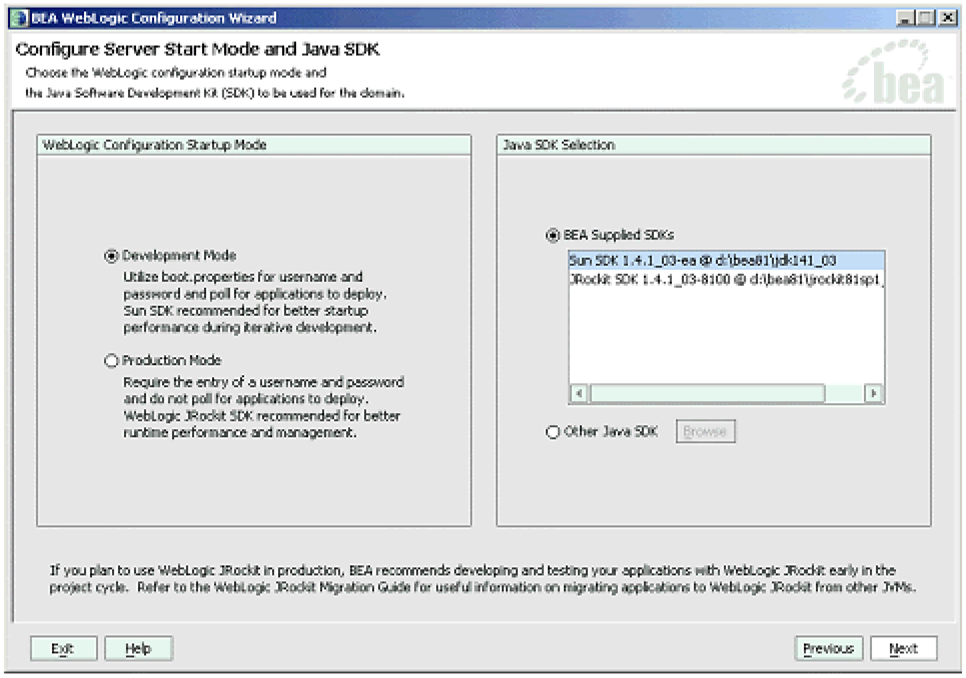
Confirm User Password * *********

Description This user is the default administrator.

9. Enter “*weblogic*” for the username and “*weblogic*” for the password and click **Next**.

10. The “Configure Server Start Mode and Java SDK” screen is displayed.

    Configuration Wizard – Start Mode



BEA WebLogic Configuration Wizard

Configure Server Start Mode and Java SDK

Choose the WebLogic configuration startup mode and the Java Software Development Kit (SDK) to be used for the domain.

WebLogic Configuration Startup Mode

(●) Development Mode
Utilize boot.properties for username and password and poll for applications to deploy. Sun SDK recommended for better startup performance during iterative development.

( ) Production Mode
Require the entry of a username and password and do not poll for applications to deploy. WebLogic JRockit SDK recommended for better runtime performance and management.

Java SDK Selection

(●) BEA Supplied SDKs
Sun SDK 1.4.1_03-ea @ d:\bea81\jdk141_03
JRockit SDK 1.4.1_03-8100 @ d:\bea81\jrockit81sp1

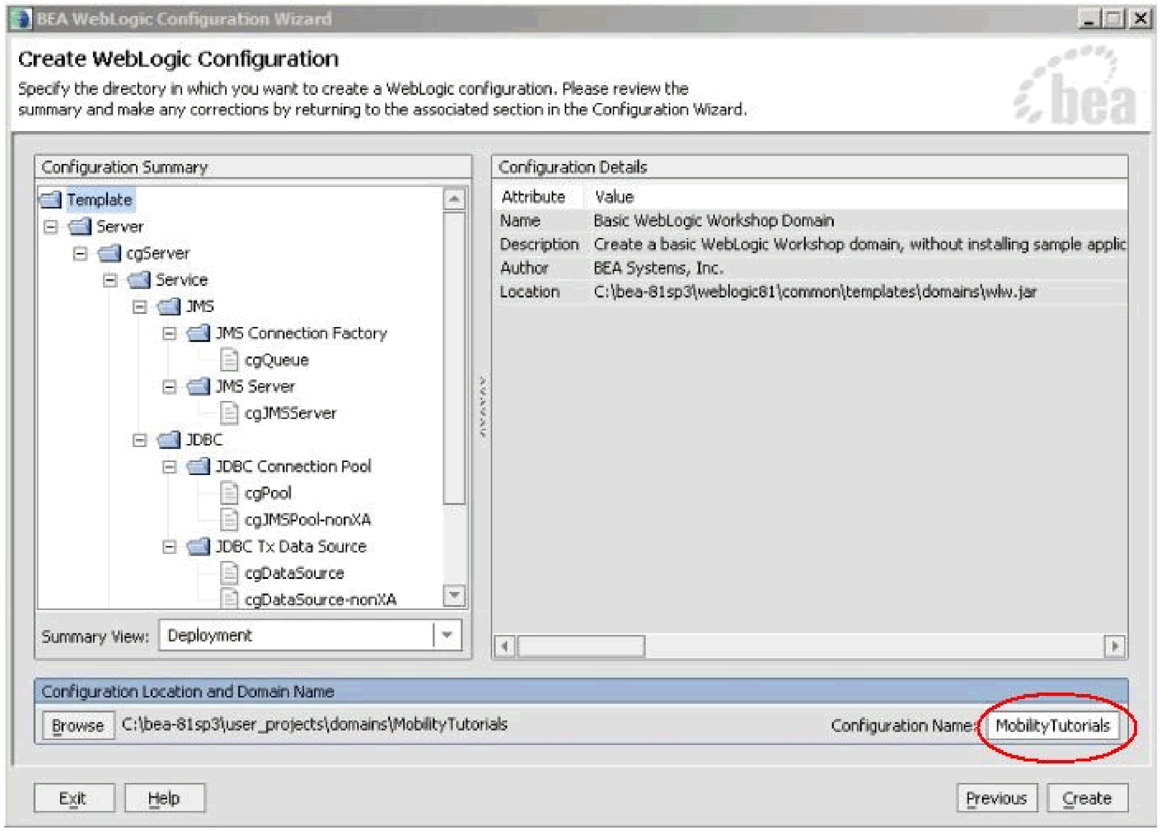
( ) Other Java SDK

If you plan to use WebLogic JRockit in production, BEA recommends developing and testing your applications with WebLogic JRockit early in the project cycle. Refer to the WebLogic JRockit Migration Guide for useful information on migrating applications to WebLogic JRockit from other JVMs.

11. Select **Development Mode** within the **WebLogic Configuration Startup Mode** section.
12. Select the **Sun JDK** within the **Java SDK Selection** section and click **Next**.

13. The “Create WebLogic Configuration” screen is displayed.

Configuration Wizard – MobilityTutorials



BEA WebLogic Configuration Wizard

Create WebLogic Configuration

Specify the directory in which you want to create a WebLogic configuration. Please review the summary and make any corrections by returning to the associated section in the Configuration Wizard.

Configuration Summary

```
Template
⊟ Server
   ⊟ cgServer
      ⊟ Service
         ⊟ JMS
            ⊟ JMS Connection Factory
                 cgQueue
            ⊟ JMS Server
                 cgJMSServer
         ⊟ JDBC
            ⊟ JDBC Connection Pool
                 cgPool
                 cgJMSPool-nonXA
            ⊟ JDBC Tx Data Source
                 cgDataSource
                 cgDataSource-nonXA
```

Summary View: Deployment

Configuration Details

Attribute	Value
Name	Basic WebLogic Workshop Domain
Description	Create a basic WebLogic Workshop domain, without installing sample applic
Author	BEA Systems, Inc.
Location	C:\bea-81sp3\weblogic81\common\templates\domains\wlw.jar

Configuration Location and Domain Name

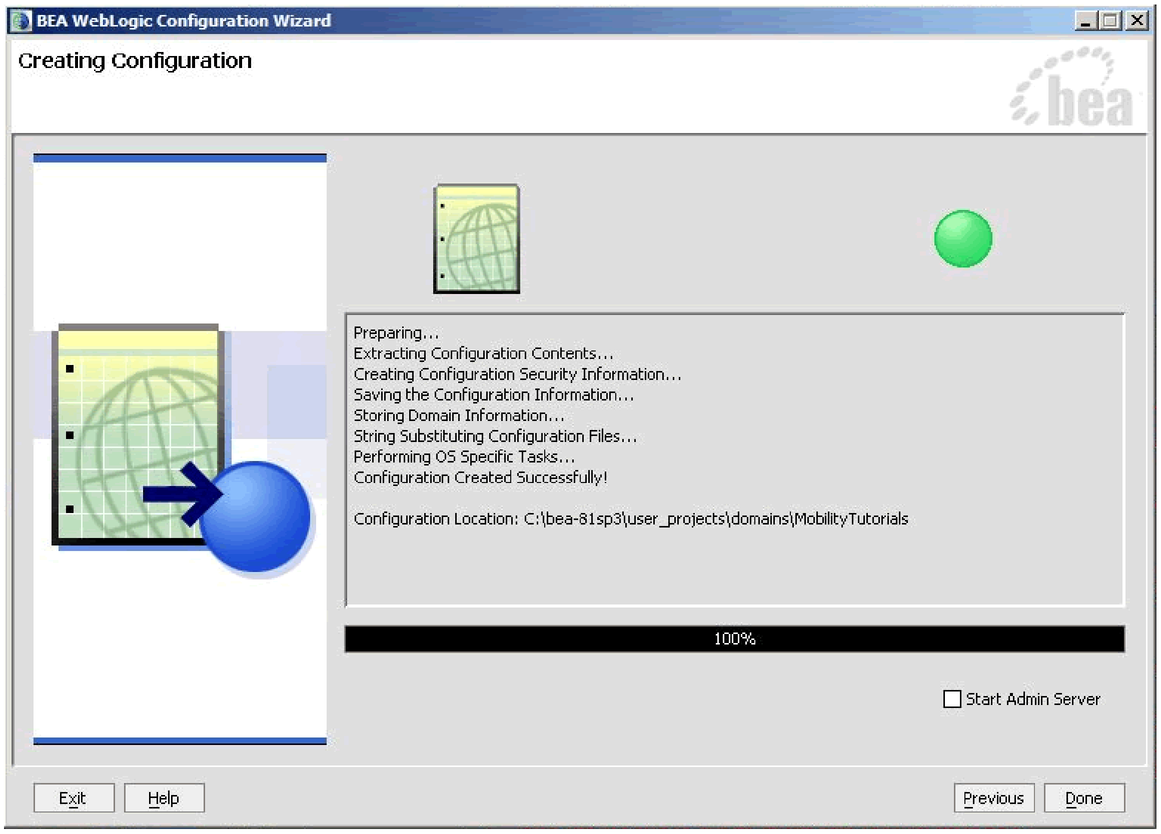
Browse C:\bea-81sp3\user_projects\domains\MobilityTutorials

Configuration Name: MobilityTutorials

14. Enter “MobilityTutorials” in the **Configuration Name** field and click **Create**.

15. The configuration wizard will now create the domain The “Creating Configuration” screen is displayed.

Configuration Wizard – Creating Configuration



```
Preparing...
Extracting Configuration Contents...
Creating Configuration Security Information...
Saving the Configuration Information...
Storing Domain Information...
String Substituting Configuration Files...
Performing OS Specific Tasks...
Configuration Created Successfully!

Configuration Location: C:\bea-81sp3\user_projects\domains\MobilityTutorials
```

100%

16. When it completes, click **Done**.

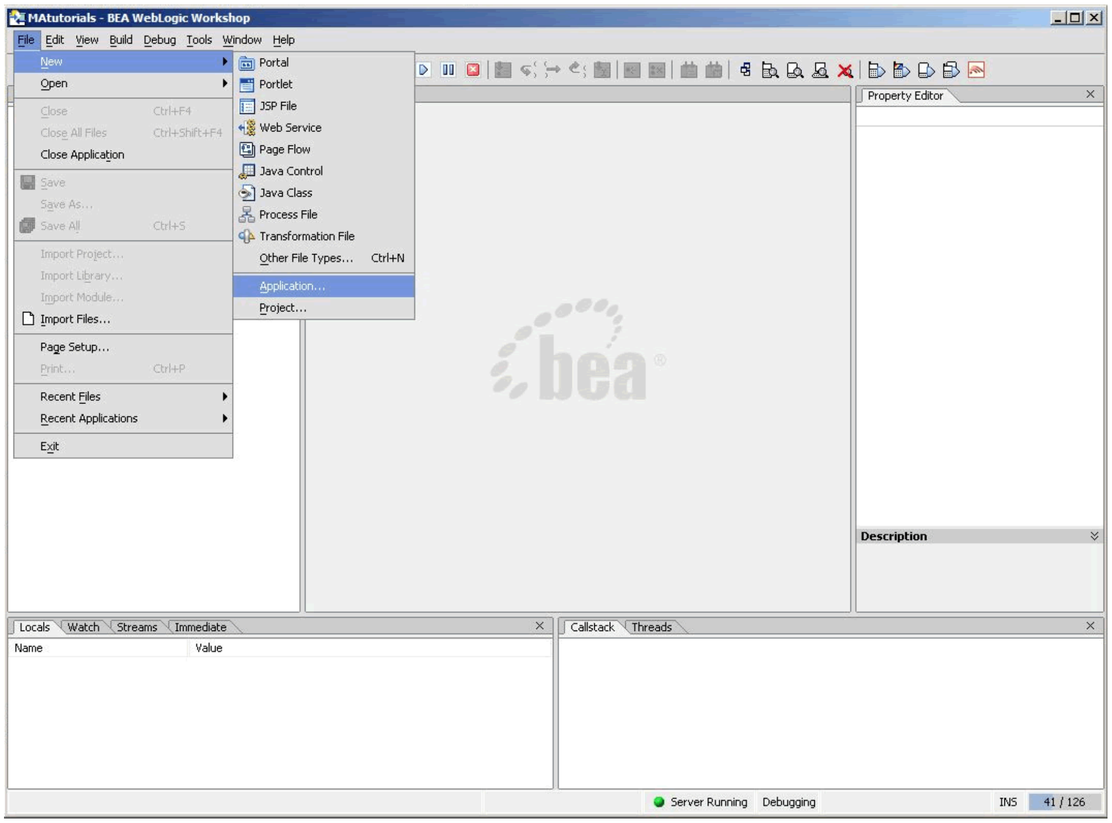
Note: When you create a domain using the BEA WebLogic Configuration Manager, a default PointBase database is installed. The Device Repository will be installed into this database.

Create MobilityTutorials Application

To create the MobilityTutorials application:

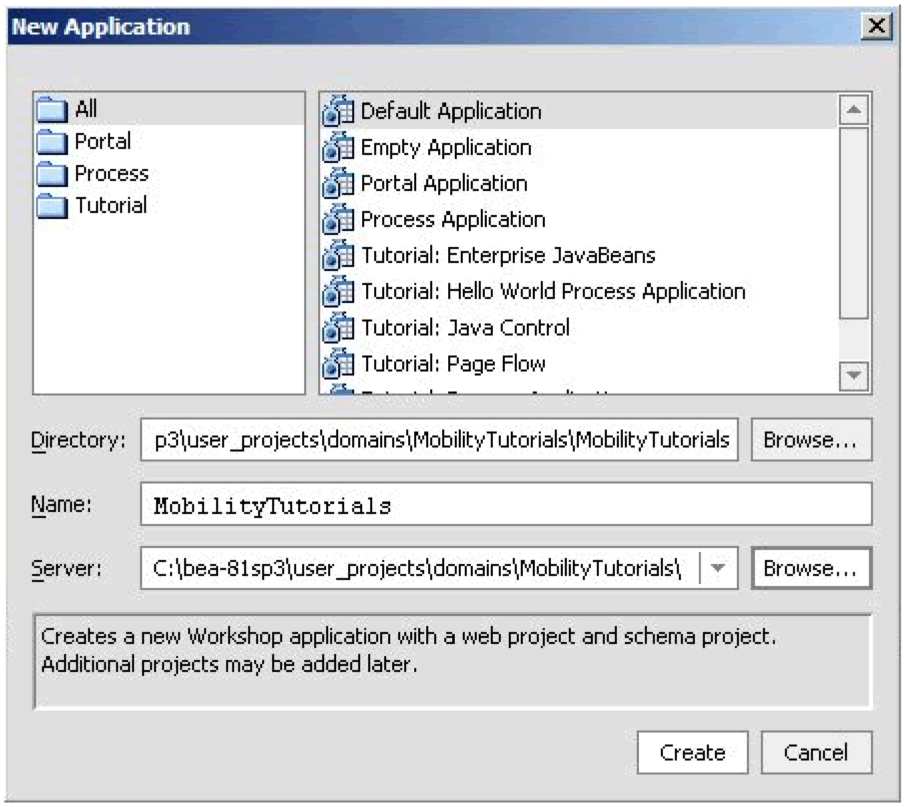
1. To create a new application in Workshop, choose **File →New → Application**.

   Create New Application



2. The “New Application“ window is displayed.

New Application Dialog



Directory: p3\user_projects\domains\MobilityTutorials\MobilityTutorials

Name: MobilityTutorials

Server: C:\bea-81sp3\user_projects\domains\MobilityTutorials\

Creates a new Workshop application with a web project and schema project. Additional projects may be added later.

Here:

- Select **Default Application**
- Click **Browse** next to the **Directory** field and browse the Domains directory, selecting your newly created “MobilityTutorials” domain.
- Enter “mobilitytutorials” in the **Name** field – this is the application where you will import the sample mobility portal application.
- Click **Browse** next to the **Server** field and select the *config.xml* file inside the newly created “MobilityTutorials” domain

3. Once you have filled in the fields as illustrated, click **Create** and the application will be created

Now that you have created a new Domain and a new Application, you can import the Mobility Tutorials.

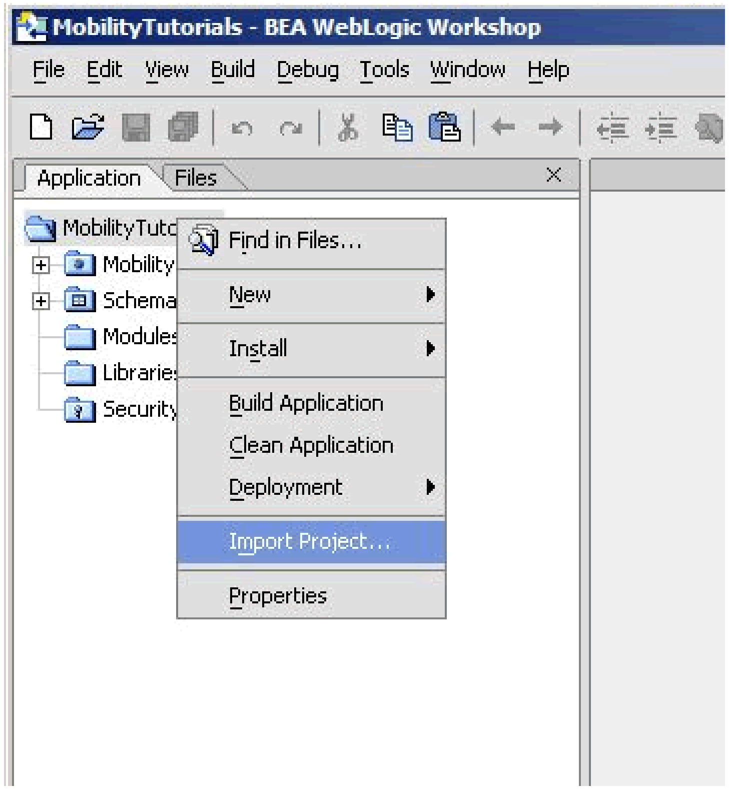
Import the Mobility Tutorials

The mobility tutorials are located in the **<bea>\weblogic81\mobility\samples\tutorials** directory.

To import the tutorials:

1. Right-click the newly created “MobilityTutorials” application in the Application tree window.

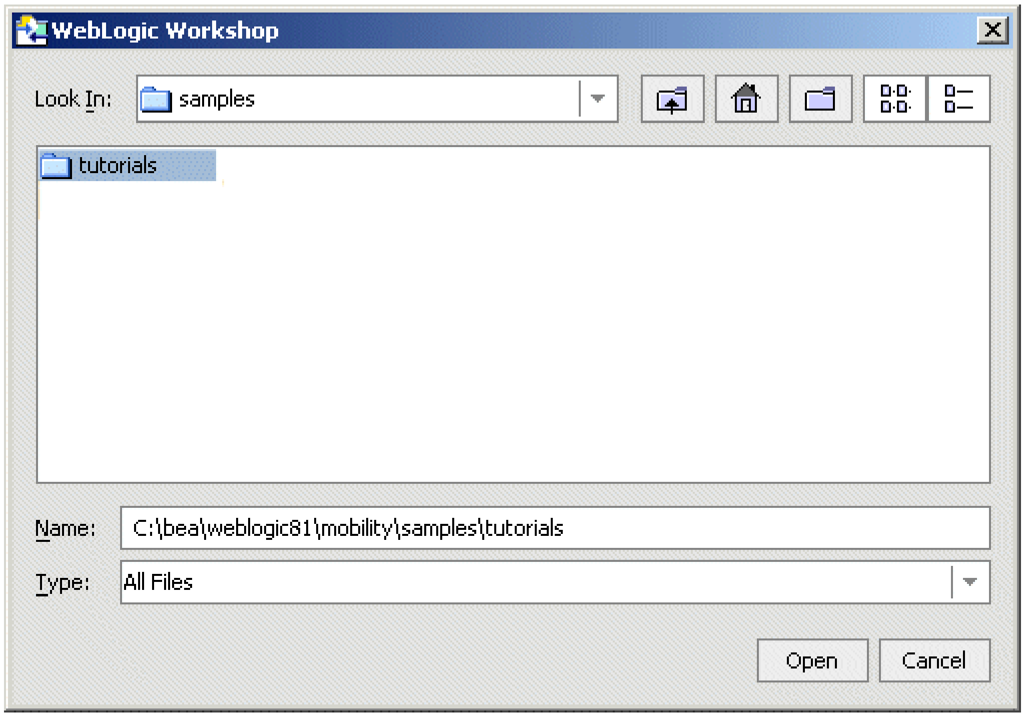
Import Project



2. Select **Import Project**.

3. The “Import Project – New Project” screen is displayed. Click **Browse** next to the **Directory:** field. The following dialog is displayed.

Locate Mobility Tutorials



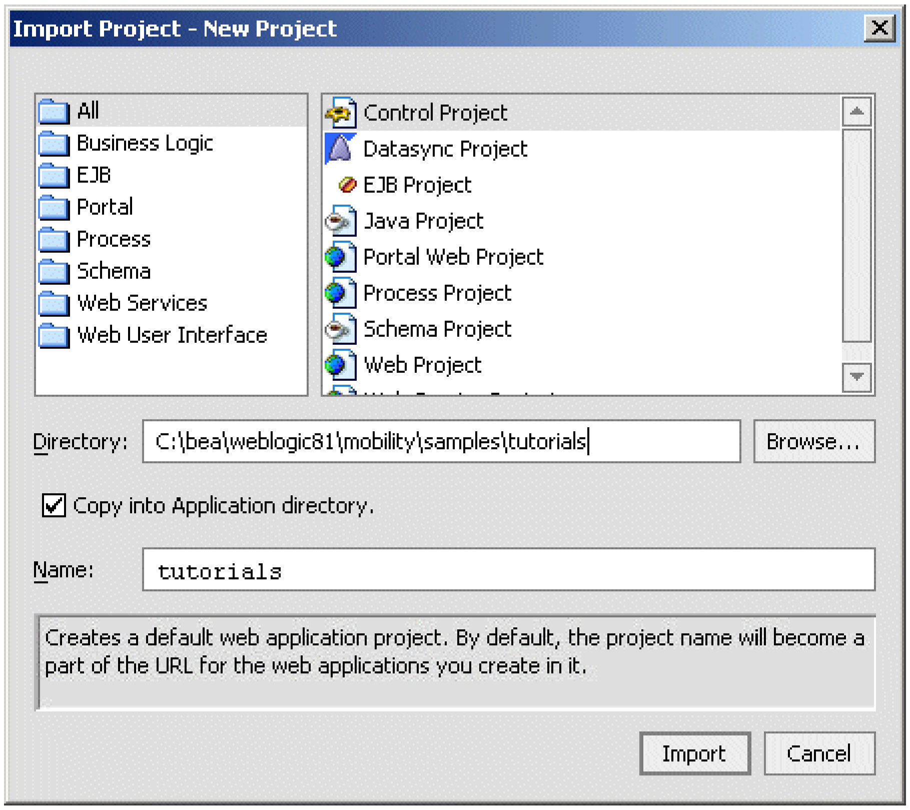
Name: C:\bea\weblogic81\mobility\samples\tutorials

Type: All Files

4. Browse to **<bea>\weblogic81\mobility\samples\tutorials** directory and click **Open**.

5. The Directory will now be filled in with a default Name for the application set to “tutorials”.

   Import Mobility Tutorials



Directory: C:\bea\weblogic81\mobility\samples\tutorials

☑ Copy into Application directory.

Name: tutorials

Creates a default web application project. By default, the project name will become a part of the URL for the web applications you create in it.

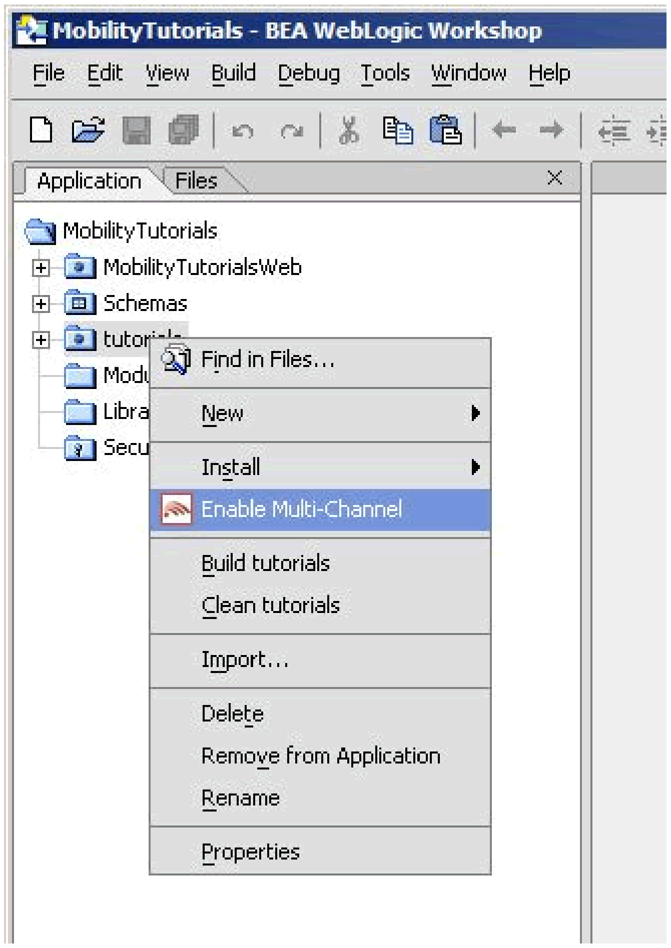
6. Select “Web Project” from the right hand pane.

   Note: Do not select Portal Web Project.

7. Ensure that **Copy into Application Directory** is selected.
8. Click **Import**.

9. Once you have imported the tutorials project, you should now enable it for multi-channel delivery.

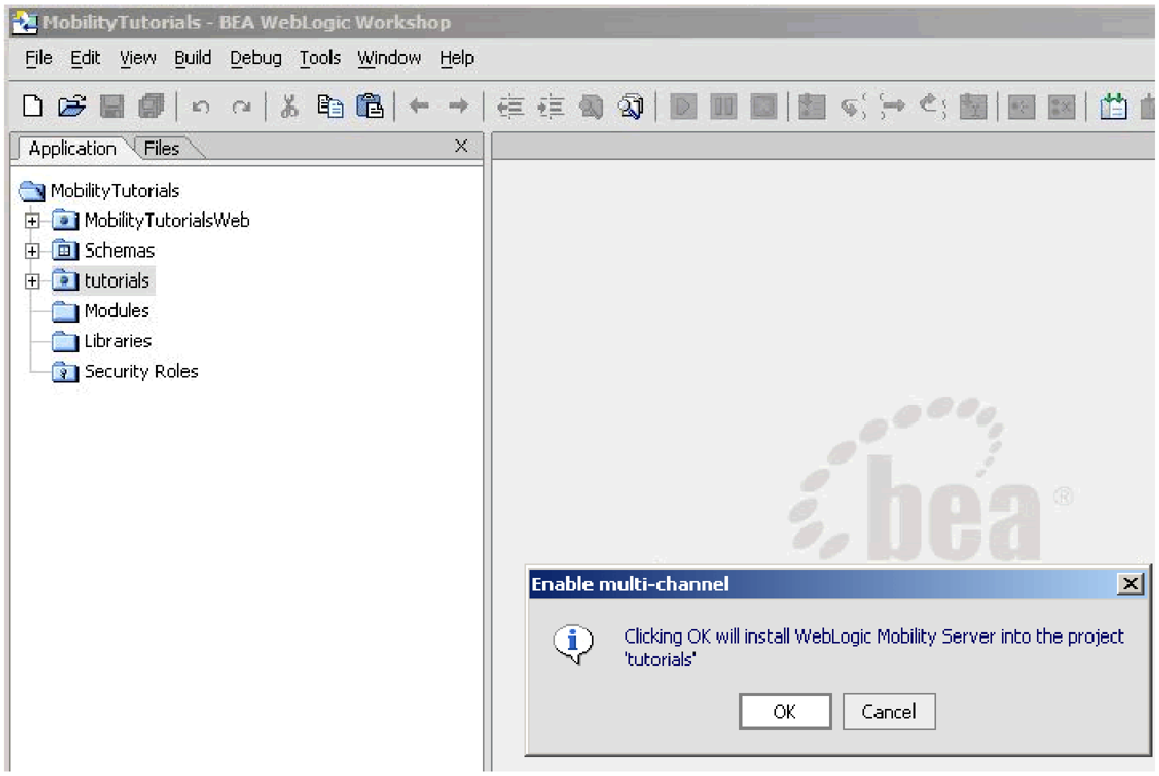
   Select Enable Multi-Channel



10. Right-click on the **tutorials** project folder and choose **Enable Multi-Channel**.

11. The “Enable Multi-Channel” window is displayed.

    Install WebLogic Mobility Server into the Project



Clicking OK will install WebLogic Mobility Server into the project 'tutorials'

12. Click **OK**. A ”Files copied/modified successfully” message will be displayed. Click **OK** to continue.

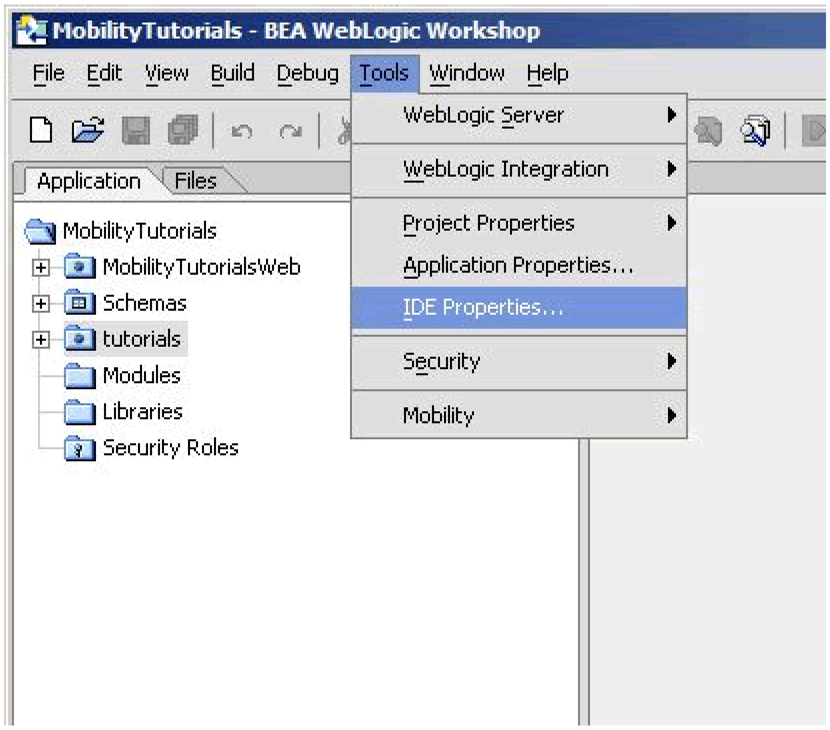
The last step before running the tutorials is to configure device emulators into your Workshop environment. This is described in the section, "Configure the Device Emulators".

Configure the Device Emulators

To help you view the results of the tutorials on a number of different devices, you can use device emulators, which emulate the way the mobilized content looks on a particular device (for example phones, PDAs). Several emulators are available for download free of charge on the Internet. This section describes how to configure the emulators for use within BEA Workshop.

1. To configure the tools and emulators for usage within the BEA Workshop environment, select IDE properties from the Tools Menu. Choose **Tools → IDE Properties**.

   IDE Properties

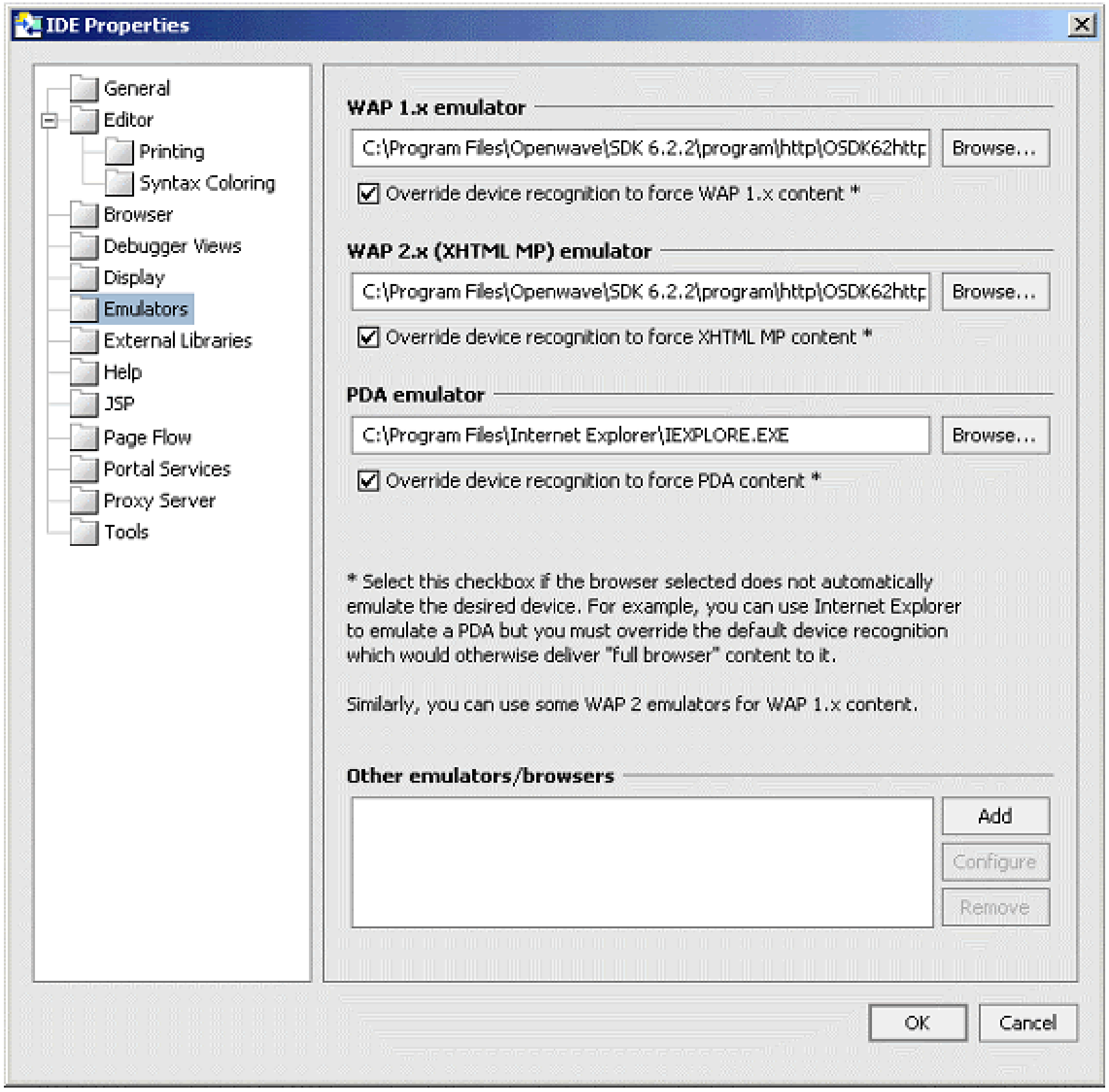
2. Now configure the emulators:
   - Select the **Emulators** tab.
   - Select WAP1.x emulator by browsing to the appropriate emulator executable file.

     Note: We recommend using the Openwave Emulator, which can emulate WAP 1.x and XHTML-MP devices. However, emulators from Nokia, Ericsson, or others can also be utilized. If using an Openwave Emulator, select the *OSDK62http.exe* (for version 6.2) or the OSDK61http.exe (for version 6.1) in the installation directory where you have installed the emulator; for example, **C:\Program Files\Openwave\SDK 6.1\program\http**.
   - Select the WAP2.0 emulator by browsing to the appropriate emulator executable file.
   - Select the PDA emulator by browsing to the appropriate emulator executable file.
   - You can find a PDA emulator at

     <**bea**>**\weblogic81\mobility\tools\emulators***PDA.exe*.

- Alternatively, to set up Microsoft Internet Explorer to function as a PDA emulator, browse to your iexplore.exe in the PDA emulator text box as can be seen in the following graphic and select the **Override device recognition to force PDA content** check box.

Setting up Microsoft Internet Explorer as a PDA Emulator



WAP 1.x emulator: C:\Program Files\Openwave\SDK 6.2.2\program\http\OSDK62http

☑ Override device recognition to force WAP 1.x content *

WAP 2.x (XHTML MP) emulator: C:\Program Files\Openwave\SDK 6.2.2\program\http\OSDK62http

☑ Override device recognition to force XHTML MP content *

PDA emulator: C:\Program Files\Internet Explorer\IEXPLORE.EXE

☑ Override device recognition to force PDA content *

* Select this checkbox if the browser selected does not automatically emulate the desired device. For example, you can use Internet Explorer to emulate a PDA but you must override the default device recognition which would otherwise deliver "full browser" content to it.

Similarly, you can use some WAP 2 emulators for WAP 1.x content.

You are now ready to run the Getting Started Tutorials described throughout this remainder of this document.

Introduction to the Mobility Tags

The mobility tags form the essential building blocks for mobilizing web sites. A series of tutorials has been developed covering the various aspects involved in marking up content so that it can be viewed on a wide range of client device types. This section will introduce a few of the basic concepts that need to be understood before starting out. The tutorial files used in this section can be found in the tutorials Workshop project under **\ch1**.

About mmXHTML and the JSP Tag Library

WebLogic Mobility Server adds a module to XHTML, called multi-mode XHTML, or mmXHTML. This module is a subset of XML elements (tags) that simplifies the task of structuring and presenting web applications on various devices including PCs, PDAs and web enabled phones. The mmXHTML tag names begin with the characters "mm-".

For working with JSP files, the functionality of the mmXHTML tags is also available through the JSP tag library (taglib). Using the JSP taglib offers enhanced performance when delivering content to PC browsers. The JSP tag names begin with the characters "mm:".

Throughout the tutorials, these elements will be referred to as *mobility tags*. Both sets of tags will be used in this manual.

The mobility tags enable you to take a single-source approach to your content. With them, you can organize your content into logical units, and use a variety of techniques within WebLogic Mobility Server to control the delivery and presentation of the content to different devices.

The following table lists the mobility tags and gives a brief description of their function.

The Mobility Tags

Tags	Description
mm-body mm:body	Acts as a container for the content within a group element.
mm-exclude mm:exclude	Used to enclose content that is to be excluded when a specific device class is targeted.
mm-group mm:group	Used to organize your content into logical sections. These sections (or groups) can then be organized for presentation suitable to a wide range of client devices.
mm-group-ref mm:group-ref	Used to reference a previously defined group. The attributes of this tag control the way the group is displayed. This tag is used primarily for ordering content for menu driven devices and creating menus for multi-page navigation on PDAs. This tag is displayed within the structure tag.
mm-head mm:head	Groups of content can have a head that is defined by this tag. When content is delivered to small screen devices, it is often split up into a series of smaller pages or “cards”. A group heading is used to give context to content that has been split by turning the text inside this tag into a title that is displayed on each of the pages. It can also be turned into a link that helps navigate between cards.
mm-id-ref mm:id-ref	This element places the content of a referenced group at the point of insertion. This element usually resides in a layout file.
mm-img mm:img	Used to deliver the correct image based on the capabilities of the target device. Can be placed inside mm-media-group. Attributes of the XHTML <img> tag can also be used with this tag.
mm-include mm:include	Used to enclose content that is to be included when a specific device class is targeted
mm-layout mm:layout	Used to specify which layout files should be applied to the delivered content. This tag is usually placed inside the document <head> element.
mm-li mm:li	Used to define and style list items in a navigation list for handheld devices.
mm-logo mm:logo	Used to specify a logo image on WML devices. Logos appear for a user-defined interval before disappearing and being replaced by the main content.
mm-media-group	Contains the image elements that specify alternative media to deliver when a specific device is targeted.

mm:media-group	
mm-nl mm:nl	Used to define and style navigation lists targeting handheld devices.
mm-phone-number mm:phone-number	Creates a dialable link on Wireless Telephony Application Interface (WTAI) enabled devices.
mm-structure mm:structure	Used to enclose the groups that are to be delivered to menu-driven devices or PDAs. Reference the groups you want to target between the structure tags with the group-ref tag. This tag is usually placed within a layout file.
mm-table-model mm:table-model	Used to allow the author to control how table information is presented on various devices.

Additional Mobility Tools

Tags	Description
<meta> <mm:meta>	Used for the creation of an Option menu on WML devices that support such a menu. Alternatively, this tag can be used to define page-wide directives for any CDATA elements on the page.
<![CDATA...]]> <mm:cdata>	Used to wrap content that is not to be parsed by WebLogic Mobility Server. This is used primarily to stop JavaScript code from being interpreted by the parser before being delivered to the browser.
<mm:page>	Used to enclose JSP page content. Setting the attributes of this tag allows the author to optimize processing for content being delivered to the PC channel.

Use the Mobility Tags

To demonstrate the basics of marking up code, the next section will take the ubiquitous "Hello World!" example for HTML and add the mark-up tags to mobilize it. All of the tags used in this example will be explained in detail later in this manual. This will just give an overall look at the steps needed to mobilize web content.

First, the document must have a document header. For *.htm* files, two tags are needed. The first tag declares the document as an XML file. The second tag references the Document Type Definition (DTD) within which the mmXHTML mobility tags are defined. JSP files need the taglib declaration and the content must be enclosed within `<mm:page>` tags.

Examples

Example 1: hello.htm with the WebLogic Mobility Server document headers

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">
<html>
```

```
<head>
    <title>Greetings!</title>
</head>
<body>
    <p>Hello World!</p>
</body>
</html>
```

Example 2: hello.jsp with JSP document headers

```
<%@ taglib uri="mmJSPtaglib" prefix="mm" %>
<mm:page>
<html>
<head>
<title>Greetings!</title>
</head>
<body>
   <p>Hello World!</p>
</body>
</html>
</mm:page>
```

The following examples depict the files after they have been marked up with mobility tags. The *hello.htm* file has been marked up using mmXHTML. The *hello.htm* file has been marked up using the equivalent JSP tags. The output of the files is identical. They send the classic Hello World message to PC browsers but send a specialized message to the users of menu-driven devices such as phones.

Example 3: hello.htm after mobilization

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">
<html>
<head>
<title>Greetings!</title>
</head>
<mm-structure id="structure_1" where="IsMenuDriven">
<mm-group-ref idref="greeting" type="normal" depth="0" display="all" />
</mm-structure>
<body>
<mm-group id="greeting" title="hello">Hello <mm-include
where="IsMenuDriven">Mobile </mm-include>World!</mm-group>
</body>
</html>
```

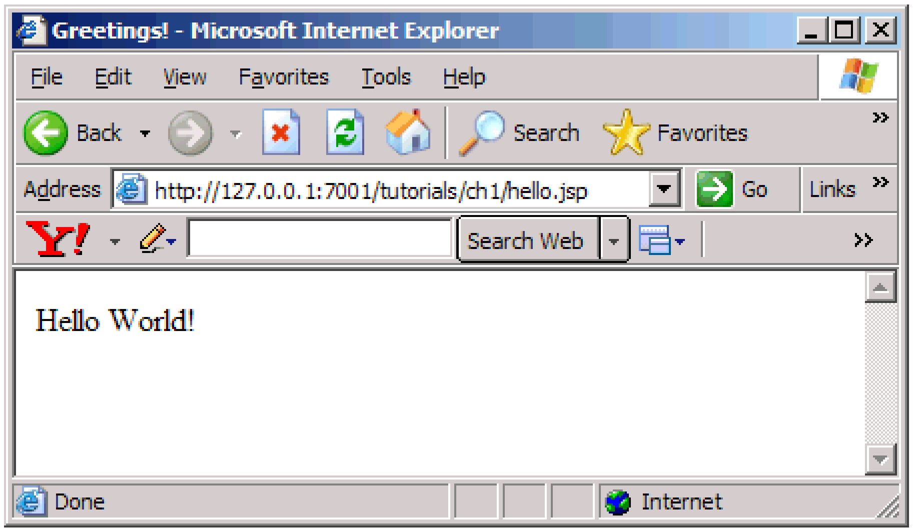
Example 4: hello.jsp after mobilization

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page>
<html>
<head>
<title>Greetings!</title>
</head>
<mm:structure id="structure_1" where="IsMenuDriven">
<mm:group-ref idref="greeting" type="normal" depth="0" display="all" />
</mm:structure>
<body>
<mm:group id="greeting" title="hello">Hello <mm:include
where="IsMenuDriven">Mobile </mm:include>World!</mm:group>
```

```
</body>
</html>
</mm:page>
```

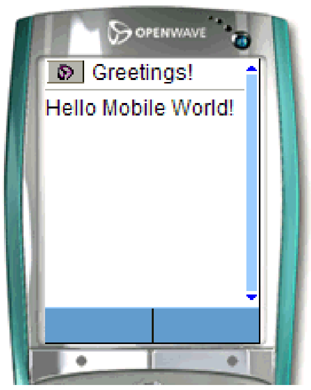
The following graphics show the output of the mobilized *hello.jsp* on PC and mobile browsers.

hello.jsp on a PC Browser


Greetings! - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back
Search
Favorites
Address
http://127.0.0.1:7001/tutorials/ch1/hello.jsp
Go
Links
Search Web
Done
Internet

Hello World!

hello.jsp on a Mobile Browser



Hello Mobile World!

Image Courtesy of Openwave Systems Inc

Create Content for PC and PDA Browsers

This section covers the more familiar environment of HTML channels, focusing specifically on the desktop browser and PDA to illustrate such concepts as organizing your content, tailoring it, and deciding how to render it on a browser. You will use these building blocks in the next section to move on to the basics of delivering content to menu-driven devices.

Most of the examples in this section ignore the use of fonts, formatting, and style sheets. This is only done for the purpose of clarity while the new information is introduced.

Note: Trying to display these files on a menu-driven device will cause an error. Mobilizing content for menu-driven devices is covered in detail in the next section.

Run the Tutorials

The complete set of tutorial files is provided in the tutorials Workshop project. The tutorial file used in this section can be found in the tutorials Workshop project under **\ch2**.

Include and Exclude Content

Whereas large screen devices can easily handle greater amounts of content, smaller screen devices often require the material to be reorganized or pared down to accommodate the smaller viewing area, memory, and/or bandwidth capabilities of the handheld devices. This tutorial illustrates how, by using the same source document, you can include certain parts of your document when delivering to one type of device and exclude other parts on other devices. WebLogic Mobility Server uses the `<mm-include>` and `<mm-exclude>` tags to do this.

This tutorial takes a weather forecast and displays different parts of the text depending on whether it is being sent to a PC or a PDA. View the contents of the file *weather.jsp* on the next page.

Note: This example uses the JSP mobility tags.

Example

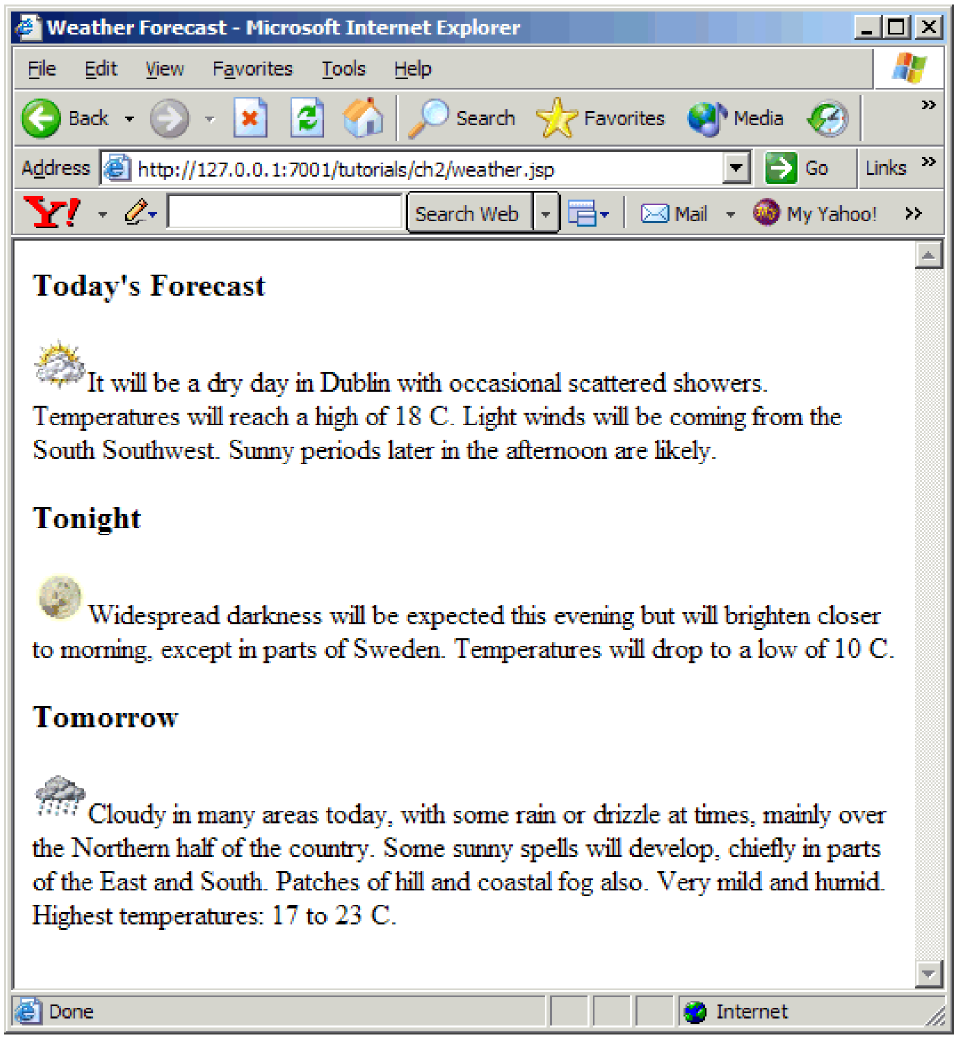
Including and Excluding Content: weather.jsp

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page>
<html>
<head>
<title>Weather Forecast</title>
</head>
<body>
<h3>Today's Forecast</h3>
<p><mm:exclude where="IsPDA"><img src="images/cloud.gif"></mm:exclude>It will
be a dry day in Dublin with occasional scattered showers. Temperatures will
reach a high of 18 C. Light winds will be coming from the South Southwest.
Sunny periods later in the afternoon are likely.
</p>
<mm:include where="IsFullBrowser">
<h3>Tonight</h3>
<p><img src="images/moon.gif">Widespread darkness will be expected this evening
but will brighten closer to morning, except in parts of Sweden. Temperatures
will drop to a low of 10 C.
</p><h3>Tomorrow</h3>
<p><img src="images/rain.gif">Cloudy in many areas today, with some rain or
drizzle at times, mainly over the Northern half of the country. Some sunny
```

```
spells will develop, chiefly in parts of the East and South. Patches of hill
and coastal fog also. Very mild and humid. Highest temperatures: 17 to 23 C.
</mm:include>
<mm:include where="not IsFullBrowser">
<p><br />For the complete weather report, view this page in a desktop
browser.</p>
</mm:include>
</body>
</html>
</mm:page>
```

The following graphics illustrate the results of displaying *weather.jsp* on a PC browser and a PDA.

weather.jsp in a PC Browser


Weather Forecast - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://127.0.0.1:7001/tutorials/ch2/weather.jsp Go Links
Search Web Mail My Yahoo!
Done Internet

Today's Forecast

It will be a dry day in Dublin with occasional scattered showers. Temperatures will reach a high of 18 C. Light winds will be coming from the South Southwest. Sunny periods later in the afternoon are likely.

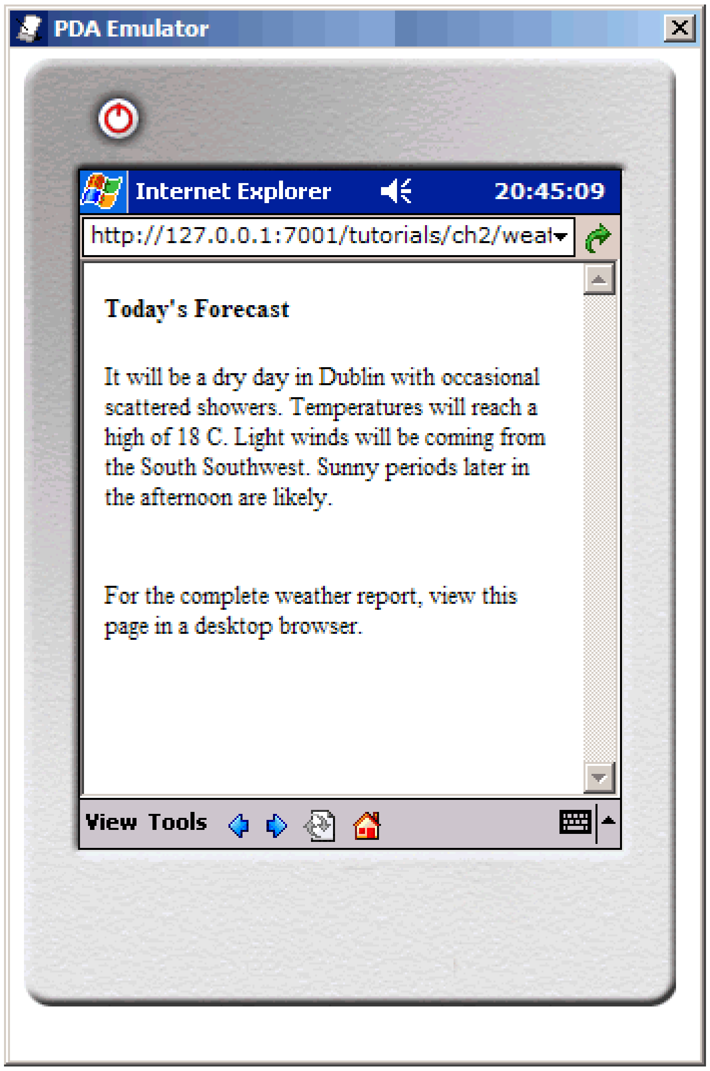
Tonight

Widespread darkness will be expected this evening but will brighten closer to morning, except in parts of Sweden. Temperatures will drop to a low of 10 C.

Tomorrow

Cloudy in many areas today, with some rain or drizzle at times, mainly over the Northern half of the country. Some sunny spells will develop, chiefly in parts of the East and South. Patches of hill and coastal fog also. Very mild and humid. Highest temperatures: 17 to 23 C.

weather.jsp in a PDA Browser



Today's Forecast

It will be a dry day in Dublin with occasional scattered showers. Temperatures will reach a high of 18 C. Light winds will be coming from the South Southwest. Sunny periods later in the afternoon are likely.

For the complete weather report, view this page in a desktop browser.

The same content file is used to present two different displays depending on the device that is targeted. For the desktop browser, today's, tonight's and tomorrow's forecast are all displayed with a corresponding image for each section. Although this example is well within the memory and graphic capabilities of most PDAs, for the purpose of this tutorial, the second and third paragraphs have been omitted on the smaller device. An additional message to view the complete report on a PC has been tagged on to all devices that are not identified by WebLogic Mobility Server as a full browser.

Note: This example is for PDA and PC browser class devices only. Organizing the content for menu-driven devices like phones will be covered in the next section.

The first line of the file is the header that identifies where the mobility taglib definitions can be found. The rest of the content is enclosed within the `<mm:page>` and `</mm:page>` tags. WebLogic Mobility Server needs these tags to properly interpret the content.

Both the `<mm:include>` and `<mm:exclude>` tags have one attribute. The `where` attribute allows you to target a class of devices or to get more granular and identify a single device type. You can create conditional expressions (using and, or, not, <, >, <>, and so on, alone or in combination) with the WebLogic Mobility Server device attributes that select the devices that you want to target because the where expression follows Python syntax.

This simple example uses the two general device classes: “IsFullBrowser” and “IsPDA”. Notice that the message “For the complete weather report...” is displayed on the PDA only because it meets the condition where=”not IsFullBrowser”. To learn more about the where attribute, see “The “Where” Attibute.”

Content that is not inside either an `<mm-exclude>` or an `<mm-include>` tag is displayed on both devices. Also, content that is specifically included for a particular device is automatically excluded from all others.

Work with Layouts and Groups

The last tutorial displayed content for a desktop browser and a PDA. Although the amount of text was reduced for the PDA, the layout remained the same. This is often not possible when mobilizing more complex web pages. The layout for a PC can easily accommodate navigation and menu bars, large graphics, multi-column and nested tables and so on. The PDA, because of its smaller screen size and bandwidth limitations, often needs a simpler, cleaner layout. For this reason, we introduced the concept of layout files.

Layout files are basically skeleton template files which hold groups of content, but which are laid out in a fashion more suited to the smaller device. Sections of the content can be tagged as “groups” that can be referenced from within the specialized layout files to create a more appropriate display on the smaller device.

If you are designing for multiple web devices, a different layout may be created for each device or device class that has distinct browser differences (for example a portrait-style PDA vs. a landscape-style PDA).

This next tutorial demonstrates how a layout file can be used to change a two-column table intended for a desktop browser into a layout more suited for a PDA.

There are two files in this tutorial. The first file is the main content page that will display two poems side-by-side on a desktop browser. The second file is the layout file that takes the two poems from the file called *poetry.jsp* and places them one on top of the other for PDA display.

The mobility tags that are used here are:

```
<mm:layout>
<mm:group>
<mm:id-ref>
```

The `<mm:layout>` tag is placed between the source file’s opening and closing `<head>` tags. This tag contains the filename of the layout file to be used. Layout files are useful for keeping separate the main content from the design (or layout) of that content.

Each poem has been tagged as a distinct group with a unique ID which is defined in the `<mm:group>` tag’s `id` attribute. The bird poem resides within an `<mm:group>` tag with the group’s id value set to “bird“ and the sheep poem resides within a second `<mm:group>` element with the id name “sheep“.

Within the layout file, these two groups are referenced. WebLogic Mobility Server will dynamically include the content at run time when the page is requested. Each `<mm:id-ref>` tag refers to a predefined content group using its `idref` attribute. In this case, the layout file is simply a template that holds these two references. The `<table>` tags in the source file are not a part of either group, so the two poems appear as separate paragraphs in the new layout and thus are displayed one above the other.

The "Examples" section displays the code for this example. The results of these files being processed by WebLogic Mobility Server can be seen on the following pages.

Examples

Example: The *poetry.jsp* content file

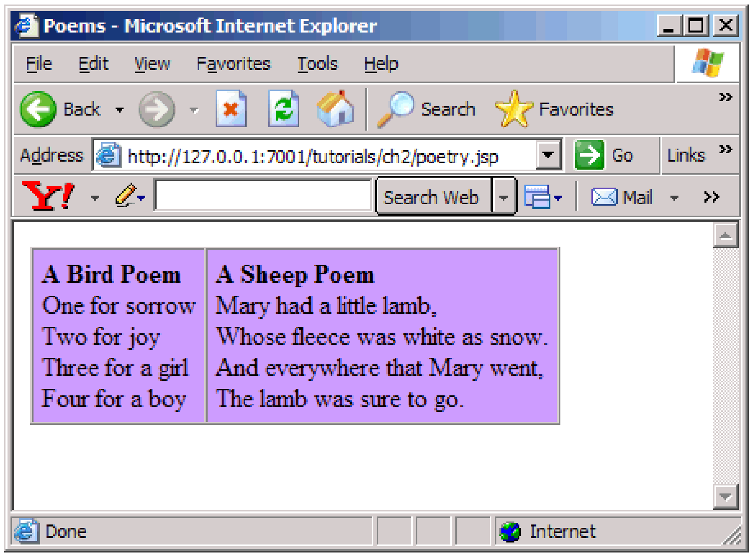
```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page>
<html>
<head>
  <title>Poems</title>
  <mm:layout where="IsPDA" src="poetry_layout.jsp" />
</head>
<body>
  <table bgcolor="#CC99FF" cellpadding="5" cellspacing="0" border="1">
    <tr>
     <td><mm:group id="bird" title="Bird Poem">
      <p><strong>A Bird Poem</strong><br />
           One for sorrow<br />
           Two for joy<br />
           Three for a girl<br />
           Four for a boy</p>
          </mm:group>
            </td>
            <td><mm:group id="sheep" title="Sheep Poem">
    <p><strong>A Sheep Poem</strong><br />
           Mary had a little lamb,<br />
           Whose fleece was white as snow.<br />
           And everywhere that Mary went,<br />
           The lamb was sure to go.</p>
         </mm:group>
         </td>
     </tr>
  </table>
</body>
</html>

</mm:page>
```

Example: This is the layout file poetry_layout.jsp

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page>
<html>
<head>
    <title>Poem PDA Layout</title>
</head>
<body>
    <mm:id-ref idref="bird"/>
    <mm:id-ref idref="sheep"/>
</body>
</html>
</mm:page>
```

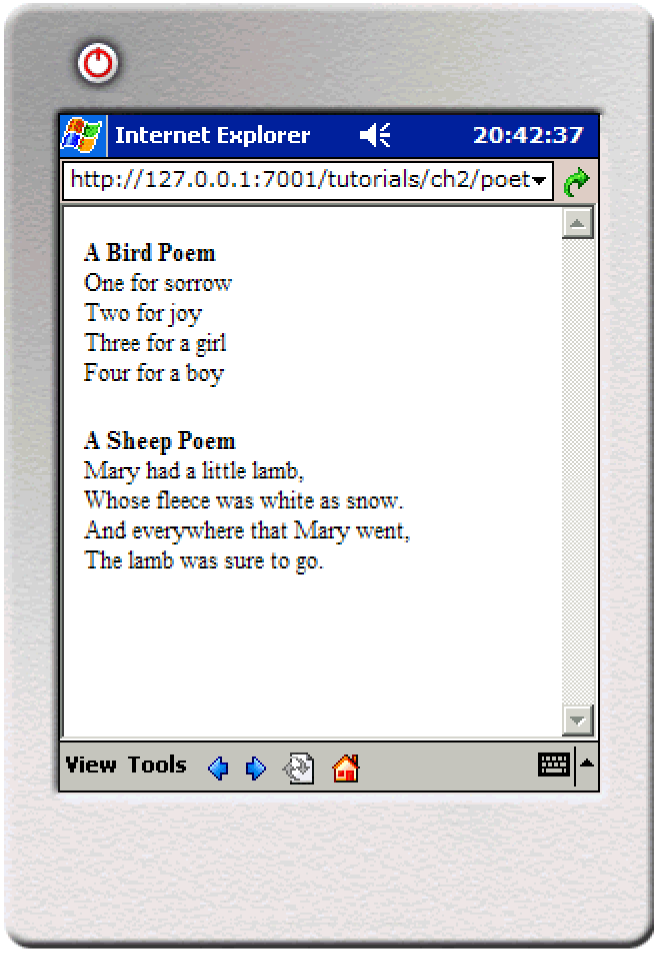
The following figures show *poetry.jsp* on PC and PDA browsers.

poetry.jsp on a PC Browser


Poems - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://127.0.0.1:7001/tutorials/ch2/poetry.jsp Go Links
Search Web Mail
Done
Internet

A Bird Poem	**A Sheep Poem**
One for sorrow	Mary had a little lamb,
Two for joy	Whose fleece was white as snow.
Three for a girl	And everywhere that Mary went,
Four for a boy	The lamb was sure to go.

poetry.jsp on a PDA Browser



A Bird Poem
One for sorrow
Two for joy
Three for a girl
Four for a boy

A Sheep Poem
Mary had a little lamb,
Whose fleece was white as snow.
And everywhere that Mary went,
The lamb was sure to go.

More About Groups

As was seen in the last example, grouping content is a way of organizing it so you can have greater control over how your content gets displayed on each device. It involves dividing the content into logical sections and assigning these sections an ID that can be individually referenced from a layout file.

Use the `<mm:group>` tag to organize content into groups and `<mm:id-ref>` to reference the group from within a layout file. The `<mm:group>` tag has two optional sub-elements that can be defined: a heading `(<mm:head>)` which contains text which can be used as a heading when content is delivered to menu-driven devices. This will be covered in detail in the next section. A body tag `(<mm:body>)` contains the main content of the group, although this tag is optional. Groups can have multiple body elements that allow you to select only part of the content within a single group for delivery to a targeted device type. This will not be covered in this tutorial.

To better demonstrate how groups work, *weather.jsp* from the previous tutorial at the beginning of this section will be re-done using groups instead of include and exclude statements. This file is called *weather2.jsp.*

Using a layout file for this example allows you to change the arrangement of the content. Even though you are drawing from a single source, you can individually tailor your displays to each device type.

This example uses the following tags:

```
<mm:group>
<mm:layout>
<mm:id-ref>
```

Examples

Example: Using a layout file: *weather2.jsp*

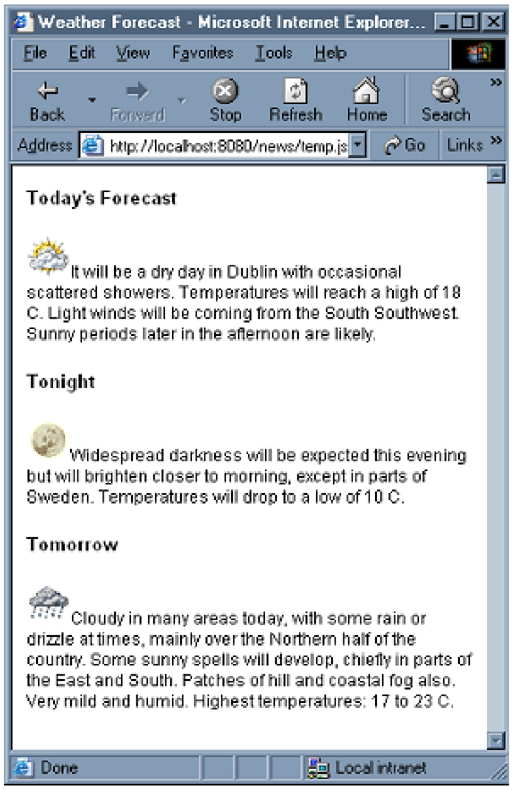
```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page content="false">
<html>
<head>
<title>Weather Forecast</title>
<mm:layout where="IsPDA" src="weather2_grp_layout.jsp" />
</head>
<body>
<mm:group id="today" title="Today’s Weather">
<p><mm:exclude where="IsPDA"><img src="images/cloud.gif"></mm:exclude>It will
be a dry day in Dublin with occasional scattered showers. Temperatures will
reach a high of 18 C. Light winds will be coming from the South Southwest.
Sunny periods later in the afternoon are likely.</p>
</mm:group>
<h3>Tonight</h3>
<p><mm:exclude where="IsPDA"><img src="images/moon.gif"></mm:exclude>Widespread
darkness will be expected this evening but will brighten closer to morning,
except in parts of Sweden. Temperatures will drop to a low of 10 C.</p>
<h3>Tomorrow</h3>
<p><mm:exclude where="IsPDA"><img src="images/rain.gif"></mm:exclude>Cloudy in
many areas today, with some rain or drizzle at times, mainly over the Northern
half of the country. Some sunny spells will develop, chiefly in parts of the
East and South. Patches of hill and coastal fog also. Very mild and humid.
Highest temperatures: 17 to 23 C.
<mm:group id="more_details" title="More Details">
<mm:include where="not IsFullBrowser">
<p><br />For the complete weather report, view this page in a full browser.</p>
     </mm:include>
</mm:group>
</body>
</html>
</mm:page>
```

Example: Rearranging the content using a layout file: *weather2_gro_layout.jsp*

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page><html>
<head><title>Weather PDA Layout</title></head>
<body bgcolor="#CCCCFF" text="#000099">
    <mm:id-ref idref="today" />
    <table cellpadding="10">
        <tr><td><img src="images/cloud.gif"></td>
            <td><img src="images/moon.gif"></td>
            <td><img src="images/rain.gif"></td>
        </tr>
    </table>
    <mm:id-ref idref="more_details" />
</body>
</html></mm:page>
```

The following figures show *weather2.jsp* on PC and PDA browsers.

weather2.jsp on a PC Browser


Weather Forecast - Microsoft Internet Explorer...
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search
Address http://localhost:8080/news/temp.js Go Links
Done
Local intranet

Today's Forecast

It will be a dry day in Dublin with occasional scattered showers. Temperatures will reach a high of 18 C. Light winds will be coming from the South Southwest. Sunny periods later in the afternoon are likely.

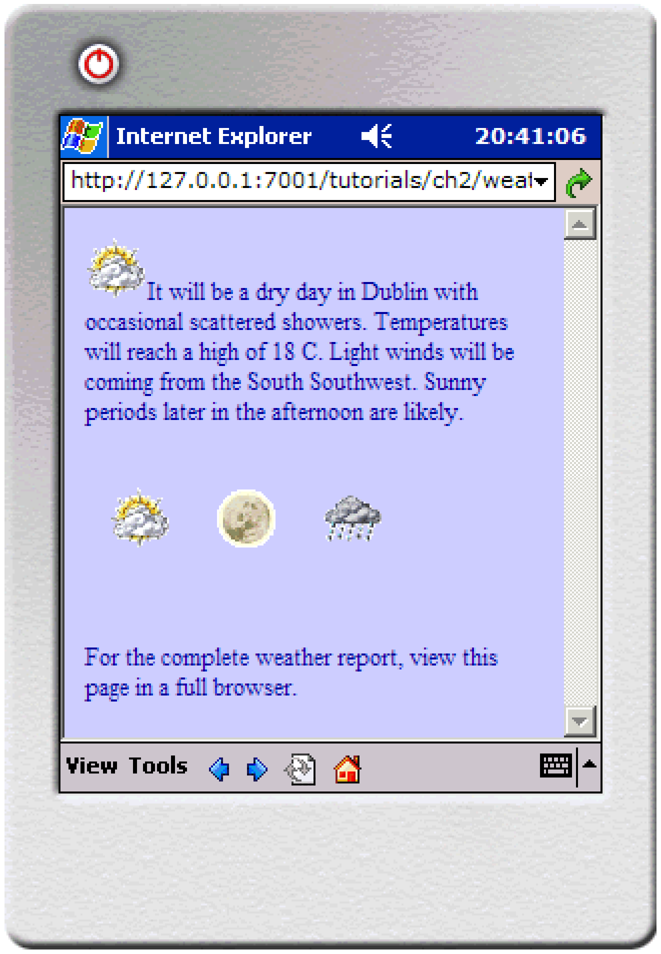
Tonight

Widespread darkness will be expected this evening but will brighten closer to morning, except in parts of Sweden. Temperatures will drop to a low of 10 C.

Tomorrow

Cloudy in many areas today, with some rain or drizzle at times, mainly over the Northern half of the country. Some sunny spells will develop, chiefly in parts of the East and South. Patches of hill and coastal fog also. Very mild and humid. Highest temperatures: 17 to 23 C.

weather2.jsp on a PDA Browser



It will be a dry day in Dublin with occasional scattered showers. Temperatures will reach a high of 18 C. Light winds will be coming from the South Southwest. Sunny periods later in the afternoon are likely.

For the complete weather report, view this page in a full browser.

Create Content for Menu-Driven Browsers

This section describes the basic steps for mobilizing your web content so it can be delivered to Wireless Application Protocol (WAP) devices. It builds upon your knowledge of organizing content into groups and shows how this same content can be delivered in a hierarchical menu format to menu-driven devices like web-enabled phones.

The tutorial file used in this section can be found in the tutorials Workshop project under **\ch3**.

Preview with Emulators

The tutorials in this section require a WAP emulator to preview the content transformed by WebLogic Mobility Server. We recommend the Openwave emulator, which can be downloaded free of charge from the Internet (www.openwave.com).

Navigate on Menu-Driven Devices

Previously, you saw that layouts were used to determine how a request page was presented on desktop and PDA browsers. For menu-driven devices, you use structures. Structures contain the references to the content groups you want delivered to a menu-driven device and attributes that can control the way this content is displayed.

Note: Structures can also be used to automatically create navigation for PDAs. This will be covered in a later section.

These references to grouped content are created with the `<mm-group-ref>` tag. The `<mm-group-ref>` tag determines which group should be displayed, whether all of the content should be displayed or whether the content should be split up and connected by navigational links.

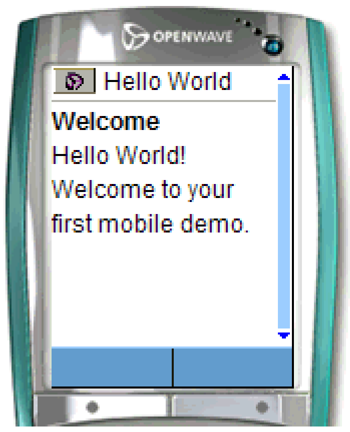
Hello World Again

This tutorial explains how to deliver a “Hello World” message to a menu-driven device similar to the one seen in ”The Introduction to the Mobility Tags” section. The mmXHTML tag set will be used for these tutorials. Notice that these tags are similar to the JSP taglib used in the previous section, but the document header is different.

View the results when this file is sent to a WML device. The tutorial file used in this section can be found in the tutorials Workshop project under **\ch3**.

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/ DTD/mmxhtml_1.2.dtd">
<html>
<head>
    <title>Hello World</title>
</head>
<mm-structure id="structure_1" where="IsMenuDriven">
    <mm-group-ref idref="gp1" type="normal" depth="flat" display="all" />
</mm-structure>
<body>
    <i>This file is best viewed with a menu-driven browser</i><br />
    <mm-group id="gp1" title="Hello World">
        <b>Welcome</b><br />
         <p>Hello World! Welcome to your first mobile demo.</p>
    </mm-group>
</body>
</html>
```

Hello World as Seen on a WML Device



Hello World

Welcome

Hello World!

Welcome to your first mobile demo.

Image Courtesy of Openwave Systems Inc

Note: For this simple example, the `<mm-structure>` is placed inside the same file as the content. With more complex files it is good practice to place the <mm-structure> inside a separate layout file as can be seen in later tutorials. The `<mm-structure>` for menu-driven devices is typically placed between the end of the document's `<head>` and the `<body>`.

Notice that the message is inside a group.

To associate this page with a menu-driven device, the `<mm-structure>` tag is placed here at the top of the file, between the end of the `<head>` and the beginning of the `<body>` tag. The two attributes used here are `id` and `where`.

`id` is a unique identifier you assign to this structure and the `where` attribute allows you to specify the type of device you want to target. (For more information on this attribute see "The "where" Attribute."

The tag `<mm-group-ref>` is used to reference the groups you want delivered to the target device. This tag has a number of attributes that manage both display and navigation characteristics. This particular page uses:

```
<mm-group-ref idref="gp1" type=”normal” depth=”flat” display="all"/>
```

where `idref` is the ID of the group you want to reference. The other three attributes here combine to tell WebLogic Mobility Server how the group should be displayed. In this particular case, they mean that the device should attempt to display the entire contents of this group in a "flattened" hierarchy. Because this is a very small amount of content, the phone is easily able to display the entire message. With larger amounts of content, these attributes can display the content of the group behind a link. Sending groups to the phone using multiple group-ref tags within the structure creates a menu of linked items. More details on these attributes are presented later in this section.

Notice the closing slash "/" at the end of the `<mm-group-ref>` tag. WebLogic Mobility Server requires "well-formed" XHTML valid content. The group-ref tag is an empty tag (it doesn't require a closing `</mm-group-ref>`). The slash at the end closes the tag conforming to the XHTML standards.

Basic Navigation

The previous example delivered a single group to a menu-driven device. The small amount of content could be displayed on one page. The reduced screen size and memory capabilities of most web-enabled phones, however, necessitate breaking larger pages into a series of smaller pages, or cards, among which the user can navigate.

MIS can automatically generate these navigation links. The tag `<mm-group-ref>` controls how the content is displayed.

The files for this tutorial are located in the tutorials Workshop project under **\ch3**.

This tutorial shows how you can place content behind links when delivering it to menu-driven devices. The `<mm:group-ref>` tag uses its attributes to control how the information is delivered.

The mark-up for this tutorial can be seen in the "Examples" section here.

Examples

Example: airport.jsp

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page>
<html>
<head>
<title>Dublin Airport</title>
<mm:layout where="IsPDA or IsMenuDriven" src="airport_layout.jsp" />
</head>
<body>
<mm:group id="welcome" title="Welcome">
<p>Welcome to Dublin Airport Information. Here is the latest available
information for flights arriving and departing Dublin International
Airport.</p>
</mm:group>
<mm:group id="arrivals" title="Arrivals">
<h3>Arrivals</h3>
<p>Flight: E1 525 <br /> Time: 15:55<br /> From: Paris-CDG<br /> Status:
Arrived</p>
<p>Flight: E1 607 <br /> Time: 16:50<br /> From: Amsterdam<br /> Status:
Delayed</p>
<p>Flight:BU 575 <br /> Time: 17:50<br /> From: Oslo<br /> Status: Due At:
17:20</p>
</mm:group>
<mm:group id="departures" title="Departures">
<h3>Departures</h3>
<p>Flight: AC 555 <br /> Time: 15:45<br /> To: Glasgow<br /> Status: On
Time</p>
<p>Flight: DR 709 <br /> Time: 16:55<br /> To: Manchester<br /> Status: On
Time</p>
<p>Flight:BT 4453 <br /> Time: 17:05<br /> From: Frankfurt<br /> Status:
Delayed Departure</p>
</mm:group>
</body>
</html>
</mm:page>
```

Example: Rearrange content for menu-driven devices: *airport_layout.jsp*

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page><html>
<head><title>Dublin Airport Layout</title></head>
<mm:structure where="IsMenuDriven" id="str1">
```

```
  <mm:group-ref idref="welcome" type="normal" display="all" depth="flat" />
  <mm:group-ref idref="arrivals" type="normal" display="headings" depth="0" />
  <mm:group-ref idref="departures" type="normal" display="headings" depth="0"
/>
</mm:structure>
<body>
    <mm:id-ref idref="welcome" />
    <mm:id-ref idref="arrivals" />
    <mm:id-ref idref="departures" />
</body>
</html></mm:page>
```

The following graphic illustrates the effects on a Menu Driven browser. The first group is displayed in full. The second and third groups appear only as links.

airport.jsp on a Menu Driven Browser

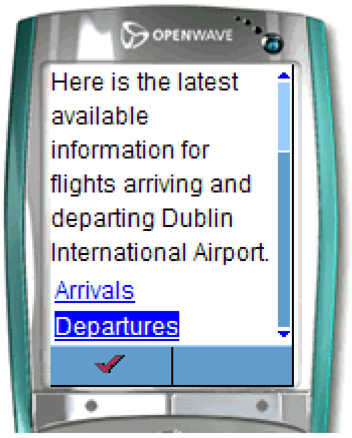

OPENWAVE
Here is the latest available information for flights arriving and departing Dublin International Airport.
Arrivals
Departures

Image Courtesy of Openwave Systems Inc

Notes

The `<mm:layout>` tag has its where attribute set to “IsPDA or IsMenuDriven”. This tells MIS that the layout for those two device types is found in the file defined by the `src` attribute.

The structure has been placed inside the layout file. This is a good practice as it keeps the content separate from the device specific organization. It keeps the mark-up clear and easy to troubleshoot.

The layout for menu-driven devices is defined by the contents of the `<mm:structure>`. The rest of the file specifies the layout for PDA devices.

The content of the first group is displayed on screen in its entirety. This is because the group-ref has its attributes set to `display=”all”` and `depth=”flat”`.

The next two groups appear as links. The link text comes from the group title. To do this the group-ref attributes are set to `display=”headings”` and `depth=”0”`.

Things to Try

You can experiment by changing the value of the display attribute. Create links for all three groups.

View the content on a PDA and a full browser.

Display a Welcome Logo

This project demonstrates how to produce a welcome logo on the menu-driven device where the logo is displayed for a short interval (four seconds) before disappearing and being replaced by the main content.

Note: This tutorial uses the mmXHTML tag set.

In preparation for the next project, where you will create a horoscope, you will create a page with a horoscope logo and a piece of introductory text.

The `<mm-logo>` tag is used to create the welcome logo effect. It is wrapped around a standard `<img>` tag that references the graphic file. This graphic along with the content file for this project can be found in the tutorials Workshop project under **\ch3**.

The `displaymode` attribute can be given a value of either "once" or "always" to indicate whether the logo should be displayed once per session or each time the user goes to the URL. In addition, the `period` attribute can be used to indicate the length of time the logo should be displayed for. The default for the `period` attribute is three seconds.

You should also use the `alt` attribute that will insert text in place of the logo if the logo cannot be displayed. Again, remember the `<img>` tag must have a closing "/" to conform to the XHTML standard.

Note: There should only be one `<mm-logo>` per request page. The image should be small, no greater than 2k, to ensure it fits in the memory of the phone. (The Nokia 7110, for example, only accepts 1397 bytes of graphics). You also would want the graphic to load quickly on GSM networks and fit within the confines of the phone display screen.

Displaying a Welcome Logo

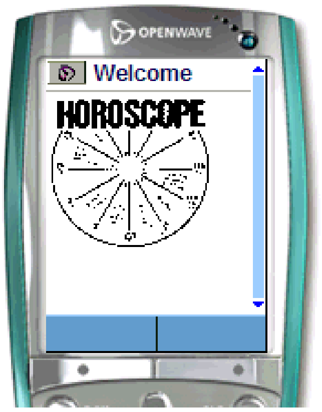


Image Courtesy of Openwave Systems Inc

For more information on `<mm-logo>` see "Display a Logo on a Menu-Driven Device" in the *BEA WebLogic Mobility Server User Guide* and "Appendix A".

Example

Display a welcome logo: *logo.htm*

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/ DTD/mmxhtml_1.2.dtd">
<html>
<head><title>Horoscope</title></head>
<mm-structure id="st_102" where="IsMenuDriven">
   <mm-group-ref idref="gp_horo_intro" type="normal" depth="0" display="all"/>
</mm-structure>
<body>
   <i>This file is best viewed with a menu-driven browser</i><br/>
   <mm-group id="gp_horo_intro" title="Welcome to the Stars">
        <mm-logo id="logo_1" displaymode="once" period="4">
           <img src="horologo.wbmp" alt="Your Stars" />
        </mm-logo>
        <p>Please choose your star sign.</p>
   </mm-group>
</body></html>
```

Things to Try

You can vary the amount of time in seconds the logo is displayed by changing the value of the `period` attribute. Try changing it to “2“, and observe the result.

Change the `displaymode` attribute to “once” or “always” and observe the result. You should find that the logo will be displayed once per session or each time the page is loaded, depending on the value of the attribute.

Advanced Navigation

This project builds on the horoscope file from the last project and demonstrates some further issues associated with navigation. You will create a basic horoscope and deliver it as a set of links; one for each star sign.

The files for this tutorial (*horoscope.htm* and *horoscope_layout.htm*) are can be found in the tutorials Workshop project under **\ch3**.

Each star sign is made into a group that is then referenced from within the <mm-structure> tag.

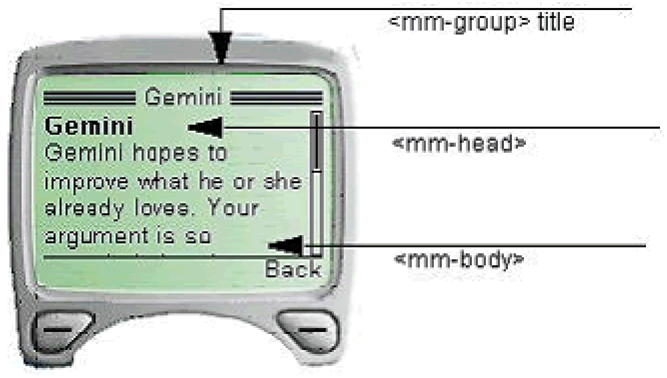
Each group makes use of its optional `<mm-head>` and `<mm-body>` elements. The `<mm-head>` is used to create a heading on menu-driven devices. This is especially important when large amounts of content are broken up into smaller pages or “cards”. Although the first page takes its title from the document’s `<title>` element, subsequent pages use the text in the `<mm-head>` as a title. The attribute `useradded` is set to “no”, which means that the text in the heading is not created specifically for menu-driven devices. It is used as a heading on PC browsers and PDAs also. If this attribute is set to “yes”, the heading is displayed only on menu-driven devices. The `<mm-body>` is used in this example to “de-select” some of the content in the group. The star sign dates are inside the group, but outside the body. This results in the dates not being sent to menu-driven devices. This reduces the amount of unnecessary content being delivered to smaller devices.

The `<mm-structure>` has been placed in a separate layout file. A series of group-refs is used to reference each of the groups. Because no specific layout has been defined for PDAs, the content will be delivered to the PDA as it would be a full browser. This should be fine for smaller amounts of content, but is likely to be problematic for larger pages.

For the introductory group, `display` is set to all. For the rest, `display` is set to headings and because there are no nested groups, depth is set to 0. For groups that are nested, the `depth` element lets you create links down to the “depth” specified.

Point your menu-driven device or emulator at the file and you should see the introductory heading and text followed by a series of links to each star sign.

Using the Group Title and Head to Give Context


<mm-group> title
Gemini
Gemini
Gemini hopes to improve what he or she already loves. Your argument is so
Back
<mm-head>
<mm-body>

Here is a portion of the *horoscope.htm* file. The complete file, as well as the layout file for menu-driven devices, is in the tutorials Workshop project under **\ch3**.

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">
<html>
<head>
  <title>Horoscope</title>
  <mm-layout src="horoscope_layout.htm" where="IsMenuDriven" />
</head>
<body bgcolor="#FFFFFF" text="#000000">
  <mm-group id="gp_horo_intro" title="Welcome to the Stars">
    <mm-head id="hd_horo_intro" useradded="no">
      <h3>Welcome to Your Stars. </h3>
    </mm-head>
    <mm-body id="bd_horo_intro"  idref="hd_horo_intro">
      <mm-logo id="logo_1" displaymode="once" period="2">
        <img src="horologo.wbmp" alt="Your Stars" />
      </mm-logo>
      <p>Please choose your star sign.</p>
    </mm-body></mm-group>
  <mm-group id="gp_aries" title="Aries">
    <mm-head id="hd_aries" useradded="no">
      <b>Aries</b>
    </mm-head><br />
      march 21 - april 19<br />
     <mm-body id="bd_aries"  idref="hd_aries">
       <p>With the Moon in Virgo, Aries goes back to business and lets others
take care of themselves. You have much on your mind, and some of it may be
about order and health. Handle your tools carefully.</p>
    </mm-body></mm-group>…
```

Things to Try

Change the `display` attribute to “all” for each of the `<mm-group-ref>` tags. The horoscope request page will be delivered as one continuous, scrollable block of text. MIS automatically paginates for the deck size of the menu-driven device (the amount of text it can hold at a time) so you will probably see a link appear as you scroll down the content.

Rearrange the order of the `<mm-group-ref>` references within the `<mm-structure>` and see how easy it is to change the sequence of your content when it gets delivered to the device.

Working with Tables

Tables are useful for presenting complex data in a more readable format. They are also useful for arranging the design elements of your content on a page. However, many mobile devices restrict how much of the table can be displayed at any time. In addition, some WML devices do not support tables at all.

WebLogic Mobility Server addresses these problems with the `<mm:table-model>` tag. Table information can be presented differently depending on the capabilities of the requesting device.

The tutorial file used in this example can be found in the tutorials Workshop project under **\ch3**.

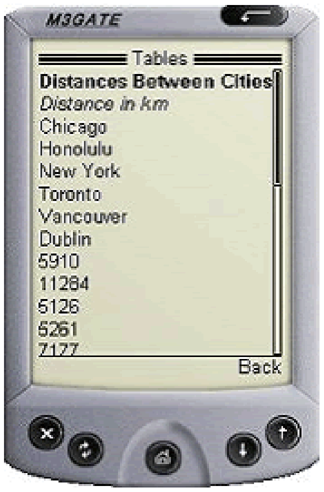
Note: The functionality of `<mm:table-model>` is used for delivering tables to handheld devices. It will have no effect on full browsers.

Sending a table to a device that doesn't handle tables, or tries at its own peril to handle tables, can have less than desirable results. The following is a table of distances in kilometers between cities.

Kilometers between cities

Distance in km	Chicago	Honolulu	New York	Toronto	Vancouver
Dublin	5910	11284	5126	5261	7177
London	6378	11650	5585	5728	7604
Moscon	8029	11342	7532	7504	8229
Paris	6675	11987	5850	6015	7946

Distances Table Sent to a Device that Does Not Support Tables



Distances Between Cities
Distance in km
Chicago
Honolulu
New York
Toronto
Vancouver
Dublin
5910
11284
5126
5261
7177

The preceding graphic illustrates the result of sending this table to a WML device that doesn't handle tables. The contents are presented linearly so all table associations are lost.

This project file (code seen in the "Examples" section) shows how the `<mm:table-model>` tag can be used to tailor the table for the requesting device. Specifically, it will send the data in table form to handheld devices that meet two criteria. They must support tables, and, to avoid excessive wrapping on the smaller screens, these devices must have screen widths greater than 200 pixels. The same table data will be flattened for devices that don’t support tables or those devices whose screen widths are less than 200 pixels.

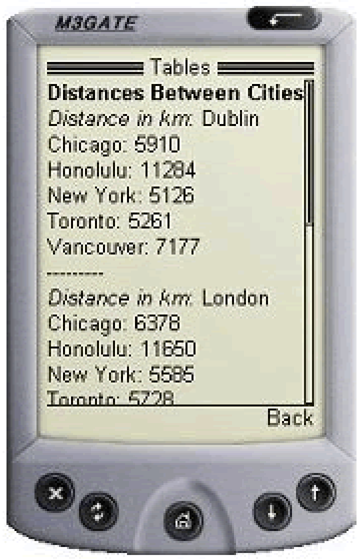
Example

tables.jsp

```
<%@ taglib uri="mmJSPtaglib" prefix="mm" %>
<mm:page content="false">
<html>
<head>
<title>Tables</title>
</head>
<mm:structure id="table_struct" where="IsMenuDriven">
 <mm:group-ref idref="gp_102" type="normal" depth="flat" display="all" />
</mm:structure>

<body>
<mm:group id="gp_102" title="Table Test">
<mm:head id="hd_102" useradded="yes">Distances Between Cities</mm:head>
<mm:body id="bd_102" idref="hd_102">
<p></p>

<table cellpadding="5" cellspacing="0" border="1">
<mm:table-model headlocation="1" bodylocation="*" major="row"
tabletype="normal" where="UAProf.BrowserUA.TablesCapable and UsableWidthPixels
>= 200"  />
<mm:table-model headlocation="1" bodylocation="*" major="row"
sdtransform="base-transform" tabletype="normal" where="(not
UAProf.BrowserUA.TablesCapable) or (UAProf.BrowserUA.TablesCapable and
(UsableWidthPixels < 200))"  />
<tr bgcolor="#FFCC99">
  <td><strong>Distance in km</strong></td>
  <td>Chicago</td>
  <td>Honolulu</td>
  <td>New York</td>
  <td>Toronto</td>
  <td>Vancouver</td>
 </tr>
<tr>
  <td bgcolor="#FFCC99">Dublin</td>
  <td>5910</td>  <td>11284</td>  <td>5126</td>  <td>5261</td>  <td>7177</td>
 </tr><tr>
  <td bgcolor="#FFCC99">London</td>
  <td>6378</td>  <td>11650</td>  <td>5585</td>  <td>5728</td>  <td>7604</td>
 </tr><tr>
  <td bgcolor="#FFCC99">Moscow</td>
  <td>8029</td>  <td>11342</td>  <td>7532</td>  <td>7504</td>  <td>8229</td>
 </tr>
 <tr>
  <td bgcolor="#FFCC99">Paris</td>
  <td>6675</td>  <td>11987</td>  <td>5850</td>  <td>6015</td>  <td>7946</td>
 </tr>
</table>
</mm:body>
</mm:group>
</body>
</html>
</mm:page>
```

The following graphic shows the resulting *tables.jsp* on a non-table-supporting device using `<mm-table-model>`.

tables.jsp with Table Rendered Using <mm-table-model>



Distances Between Cities
Distance in km: Dublin
Chicago: 5910
Honolulu: 11284
New York: 5126
Toronto: 5261
Vancouver: 7177

Distance in km: London
Chicago: 6378
Honolulu: 11650
New York: 5585
Toronto: 5728

Instead of being displayed in a linear fashion, the information in the table is readable and given context to make it understandable. This table has been flattened using the `<mm:table-model>` tag

Example breakdown

Two table-model tags have been placed inside the XHTML table in the example.

The first one is responsible for transforming tables being delivered to devices that are both capable of rendering tables and have a screen width greater than 200 pixels.

```
<mm:table-model headlocation="1" bodylocation="*" major="row"
tabletype="normal" where="UAProf.BrowserUA.TablesCapable and UsableWidthPixels
>= 200"  />
```

The second one is responsible for transforming tables being delivered to devices that cannot render tables nor have a screen width of less than 200 pixels.

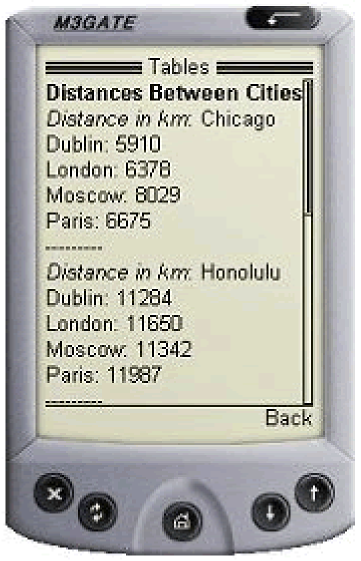
```
<mm:table-model headlocation="1" bodylocation="*" major="row"
sdtransform="base-transform" tabletype="normal" where="(not
UAProf.BrowserUA.TablesCapable) or (UAProf.BrowserUA.TablesCapable and
(UsableWidthPixels < 200))"  />
```

The various attributes of this tag can change the way the table is displayed depending on the requesting device. Here is an examination of this tag's attributes. Change the attributes in *tables.jsp* and view the results.

major="row | column"

The *major* attribute tells WebLogic Mobility Server about the orientation of the data. If row is selected for this attribute, as in the example here, the table will be displayed by row. If column is selected, as can be seen in the following example, the table will be displayed by column. Change the value of this attribute and view the results.

tables.jsp with major=”column”



Tables

Distances Between Cities

Distance in km: Chicago
Dublin: 5910
London: 6378
Moscow: 8029
Paris: 6675

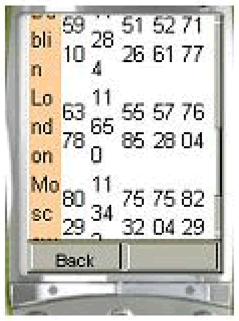
Distance in km: Honolulu
Dublin: 11284
London: 11650
Moscow: 11342
Paris: 11987

Back

sdtransform="base-transform"

Even if a mobile phone can process tables, often the screen dimensions will cause the table information to wrap excessively or to revert to a linear display if the table is still too wide. Using this attribute on table-supporting phones strips out the table and provides the equivalent non-table-supporting transformation. In effect, it “flattens” the table. Notice that the table-model tag that delivers to devices that do not support tables or have small screens uses the `sdtransform` attribute to flatten the table.

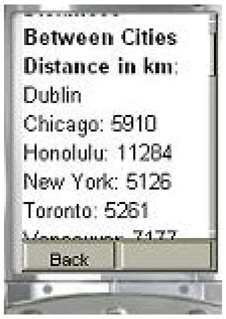
Some Devices Support Tables But Not Very Well



```
bli  59  28  51 52 71
n    10  4   26 61 77
Lo   63  11  55 57 76
nd   78  65  85 28 04
on       0
Mo   80  11  75 75 82
sc   29  34  32 04 29
```

Back

Same Device with the Table Flattened

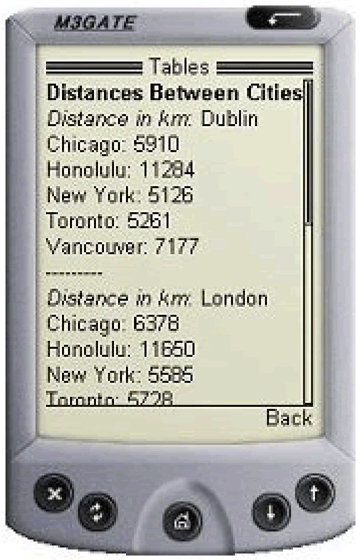

Between Cities
Distance in km:
Dublin
Chicago: 5910
Honolulu: 11284
New York: 5126
Toronto: 5261

headlocation="..."

This attribute works with the `major` attribute to identify which row (or column) should be used to identify the heading for each section. The value must be a number of a row (or column) in the table. If `major="row"` and `headlocation="1"` as in *tables.jsp*, the first row is understood to be the table heading. Each data cell in the other rows will be paired with heading cell of their column.

In non-supporting table transformations, table data is extracted from the rows or columns described by `bodylocation` (see below) and paired with the data from the rows or columns of the `headlocation` based on the `major` attribute value.

Distances Table with major="row" and headlocation="1"



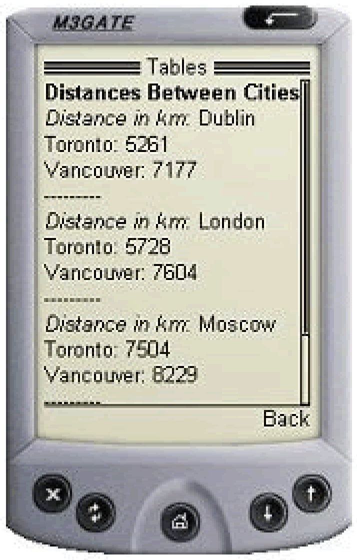
Distances Between Cities
Distance in km: Dublin
Chicago: 5910
Honolulu: 11284
New York: 5126
Toronto: 5261
Vancouver: 7177

Distance in km: London
Chicago: 6378
Honolulu: 11650
New York: 5585
Toronto: 5728

bodylocation= "..."

This optional attribute specifies which rows or columns are to be displayed. Without this attribute explicitly defined, WebLogic Mobility Server will default to displaying the entire table although a warning will appear in the Application Server console window. To explicitly direct WebLogic Mobility Server to display the entire table, set bodylocation="*". Part of the table can be displayed by setting this attribute to a space-separated list of numbers representing the rows (or columns) to be sent to the device. In the `tables.jsp` example, the author might wish to see only distances to Canadian cites in the table. To do this, set `bodylocation="1 5 6"` (and make sure `major="row"`).

Distances Table with bodylocation=”1 5 6” and major=”row”

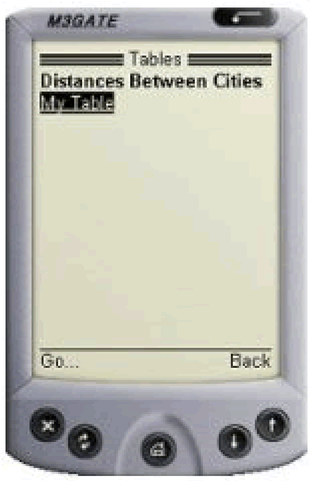


```
Tables
Distances Between Cities
Distance in km: Dublin
Toronto: 5261
Vancouver: 7177
---------
Distance in km: London
Toronto: 5728
Vancouver: 7604
---------
Distance in km: Moscow
Toronto: 7504
Vancouver: 8229
---------
Back
```

Tabletype="normal | group"

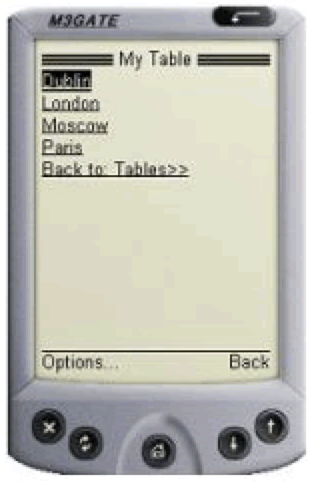
If the required attribute `tabletype` is set to “normal”, WebLogic Mobility Server will attempt to display the entire table. If the table is bigger than what can be fit onto a “card”, the page will be broken into multiple cards when necessary. Setting `tabletype` to group causes the table headers to be rendered as links. These links can be navigated to view detailed table content presented in a "table header: table data" pairing. Using `tabletype="group"` for a device that can render tables will have little effect unless the table is first “flattened” using `sdtransform`. The following three graphics illustrate the navigation through *tables.jsp* with `tabletype` set to “group”.

Distances Table First Page

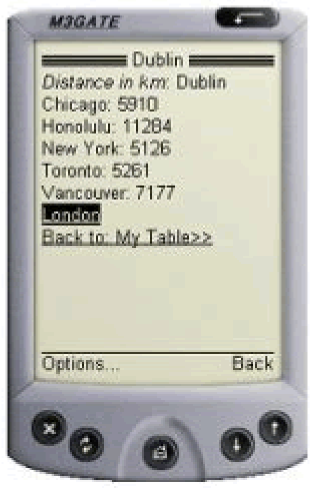


```
Tables
Distances Between Cities
My Table
Go...                Back
```

Distances Table Second Page



Distances Table Third Page



where="…"

The table-model tag uses the `where` attribute to specify a particular table configuration for a specific device or group of devices.

As can be seen from the usage of `where` in this project example, authors can use multiple table-model tags for each table defined in their content. Those used in this project were:

- where="UAProf.BrowserUA.TablesCapable and UsableWidthPixels >= 200"
- where="(not UAProf.BrowserUA.TablesCapable) or (UAProf.BrowserUA.TablesCapable and (UsableWidthPixels < 200))"

This attribute uses the Python syntax to create a complex condition.

Notes: If a device matches the set of criteria specified by the `where` attribute from more than one table-model tag, the FIRST one will be used to determine the table delivery for that device.

Because table-model has no effect on full browser display, `where=”IsFullBrowser”` is not allowed with this tag.

The `where` attribute quoted string must also not contain line breaks.

title="..."

This is an optional attribute. If present, it forms the table title when used with the `tabletype="group"` as can be seen in the above example where the title in *tables.jsp* is "My Table". If `title` is not present when `tabletype="group"` and a link name is required, the keyword “Data” will be used instead.

PDA Pagination Using Structures

PDA Pagination Navigation

As was seen earlier, content sent to PDAs often requires a simpler layout for presentation on a smaller screen. Using a layout file that references groups of content with the `<mm-id-ref>` tag is only one way of representing content on PDAs. When mobilizing larger documents, this method may require the user to scroll down to view the entire mobilized page. WebLogic Mobility Server gives authors the option of splitting their content into logical groups that appear in separate pages. A navigation menu is automatically created in the process to navigate between these pages.

Tutorial

This tutorial shows how to paginate content intended for PDA display using the `<mm:structure>` tag placed inside a layout file. The tutorial file used in this section can be found in the tutorials Workshop project under **\ch4**.

There are three files for this tutorial:

- *pda1.jsp*

  This is the main content file which contains four paragraphs each detailing how to arrive at a location using a particular mode of transport. This file calls a layout file for PDAs.

- *pda2.jsp*

  This is the layout file for PDAs. It contains a structure that refers to each of the four paragraphs in pda1.jsp. These references, contained by the `<mm:structure>`, tells WebLogic Mobility Server to create a navigation menu made up of links to these four groups.

- *mystyles.css*

  For clarity an external stylesheet has been used for this example. It color-codes the different parts of the page.

The text from these files is contained in the following three code blocks:

pda1.jsp

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page content="false">
<html>
<head>
<title>PDA Pagination</title>
<link rel="stylesheet" href="mystyle.css" type="text/css"/>
<mm:layout src="pda2.jsp" where="IsPDA" />
</head>
<body>
 <table>
  <tr><td><mm:group id="header" title="Header">
       <h4>PDA Pagination Demo</h4>
    </mm:group>
  </td></tr>
  <tr><td>
  <mm:group id="groupA" title="By Car">
     <p>One can reach us by way of the Adriatic Coastal Road from the western
and eastern directions, and from the north by the road which connects it with
the Dalmatian hinterland and with the continental part of the country. </p>
  </mm:group>
  </td></tr>
  <tr><td>
   <mm:group id="groupB" title="By Ferry">
     <p>Boden has very good ferry connections to and from the South as well as
the North. Amongst others, there are direct connections with the night train
to/from Stockholm. The travelling time from Stockholm is about 13 hours.</p>
   </mm:group>
   </td></tr>
  <tr><td>
  <mm:group id="groupC" title="By Bus">
     <p>There are good bus connections to and from Boden with "Länstrafiken".
You get to Lulea in approximately 45 minutes, to Pitea in about 1 hour and to
Jokkmokk in approximately 2 hours. </p>
  </mm:group>
  </td></tr>
  <tr><td>
  <mm:group id="groupD" title="By Plane">
     <p>The vast majority of foreign travellers arrive in Moscow at
Sheremetyevo Airport's Terminal 2. The building has a reputation as a seedy
place prowled by even seedier taxi drivers. Customs can be an ordeal, smoking
is ubiquitous and the taxi drivers are aggresive.</p>
  </mm:group>
  </td></tr>
  <tr><td>
  <mm:group id="footer" title="Footer">
    <h5>Copyright &copy; ABC Company Ltd.</h5>
  </mm:group>
  </td></tr>
</table>
</body></html>
</mm:page>
```

pda2.jsp, the layout file

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page content="false">
<html>
<head>
<title>Pagination Layout</title>
</head>
<body>
 <mm:id-ref idref="header" />
<span>
<mm:structure id="str1" where="IsPDA">
     <mm:group-ref idref="groupA" depth="0" display="headings" type="normal" />
     <mm:group-ref idref="groupB" depth="0" display="headings" type="normal" />
     <mm:group-ref idref="groupC" depth="0" display="headings" type="normal" />
     <mm:group-ref idref="groupD" depth="0" display="headings" type="normal" />
 </mm:structure>
</span>
 <mm:id-ref idref="footer" />
</body>
</html>
</mm:page>
```

mystyle.css

```
p {
       font-family: Verdana, Arial, Helvetica, sans-serif;
       font-size: 8pt;
       color: blue;
}
a { color: green; font-size: 8pt; }
```

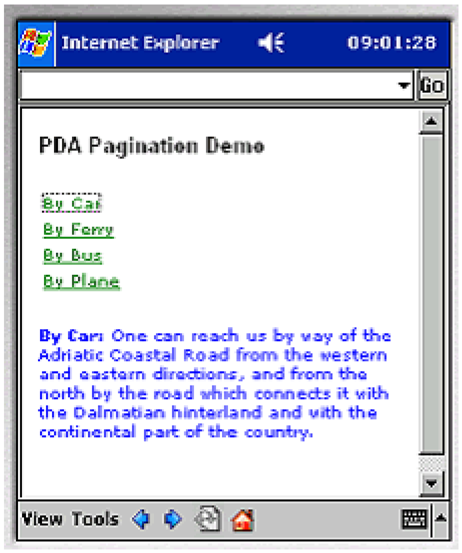
```
h4 { font-size: 9pt; }
h5 { font-size: 8pt; }
```

Results

The first two images show how this content is displayed on a PDA device. WebLogic Mobility Server creates a navigation menu from the groups that were defined in `pda1.jsp`. Each group's `title` attribute becomes a link in the menu. Below the menu are the contents of the first group. Click on another link and the contents of that group are displayed below the menu.

On a PC browser, the pagination has no effect at all.

Groups As Links in the Navigation Menu

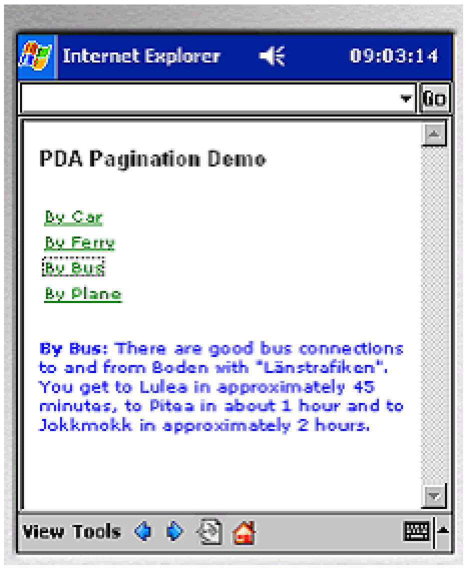


PDA Pagination Demo

By Car
By Ferry
By Bus
By Plane

By Car: One can reach us by way of the Adriatic Coastal Road from the western and eastern directions, and from the north by the road which connects it with the Dalmatian hinterland and with the continental part of the country.

Content Displayed for Clicked Group



PDA Pagination Demo

By Car
By Ferry
By Bus
By Plane

By Bus: There are good bus connections to and from Boden with "Länstrafiken". You get to Lulea in approximately 45 minutes, to Pitea in about 1 hour and to Jokkmokk in approximately 2 hours.

Key Points

- The structure is placed in the layout file. Although it can be put in the same file with the main content, it is good practice to separate the content from the layout
- The title and copyright notice are outside the `<mm:structure>`. They do not appear as links in the menu, but instead appear on every page. Content that is outside the `<mm:structure>` will be persistent on every page. Only the content of the groups referenced from within the `<mm:structure>` will be swapped in and out as links are clicked
- The `<mm:group-ref>` tag must have `display="headings"` and `type="normal"` in order for this type of pagination to work
- Multiple `<mm:structure>` tags can be placed in the layout, however, only the first one containing a `where` attribute that matches the requesting device is used. Any others will be ignored

Things to Try

Place a second `<mm:structure>` in the layout file. Put it before the other `<mm:structure>` and view the results. Put it after the other `<mm:structure>` and view the results

Navigational Menu Styling

Up to this point in the manual, the menus created by WebLogic Mobility Server for the purpose of navigation on menu-driven devices and PDAs have appeared as a plain list of links. WebLogic Mobility Server, however, provides the means to customize these menus. The following types of menu styling are possible:

- Placing the links in either a space-separated or pipe-delimited list
- Placing the links in a multi-column table
- Adding images as links with or without related text

Tutorial

For this project, the links will appear next to images in a two-column table. Example mark-up for other types of styling is included at the end of the section. The files and images used in this tutorial can be found in the tutorials Workshop project under **\ch4**.

There are three text files for this tutorial:

- *nav1.jsp*

  This is the main content file which contains four paragraphs each detailing how to arrive at a location using a particular mode of transport. This file calls a layout file for PDAs and menu-driven devices.
- *nav2.jsp*

  This is the layout file for PDAs and menu-driven devices. It contains the images for the navigation and the structure that refers to each of the four paragraphs in `nav1.jsp`.
- *mystyle.css*

  For clarity, and to create a nice look and feel, a stylesheet has been used to color-code the different sections of content.

There are several image files that have been included for this tutorial:

- *car.gif, car.wbmp, boat.gif, boat.wbmp, bus.gif, bus.wbmp, plane.gif, plane.wbmp, bullet.gif, bullet.wbmp*

The content of the text files can be seen in the subsequent three code blocks. An explanation of the mark-up used will follow.

nav1.jsp

```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page content="false">
<html>
<head>
<title>Nav Styling</title>
<link rel="stylesheet" href="mynavstyle.css" type="text/css"/>
<mm:layout where="IsPDA or IsMenuDriven" src="nav2.jsp" />
</head>
<body>
 <table>
  <tr><td><mm:group id="header" title="Header">
            <h4>Navigation Styling Demo</h4>
          </mm:group>
  </td></tr>
  <tr><td>
  <mm:group id="groupA" title="  By Car">
     <p><strong>By Car:</strong> One can reach us by way of the Adriatic
Coastal Road from the western and eastern directions, and from the north by the
road which connects it with the Dalmatian hinterland and with the continental
part of the country. </p>
  </mm:group>
</td></tr>
  <tr><td>
   <mm:group id="groupB" title="  By Ferry">
     <p><strong>By Ferry:</strong> Boden has very good ferry connections to and
from the South as well as the North. Amongst others, there are direct
connections with the night train to/from Stockholm. The travelling time from
Stockholm is about 13 hours.</p>
   </mm:group>
   </td>
  </tr>
  <tr><td>
  <mm:group id="groupC" title="  By Bus">
     <p><strong>By Bus:</strong> There are good bus connections to and from
Boden with "Länstrafiken". You get to Lulea in approximately 45 minutes, to
Pitea in about 1 hour and to Jokkmokk in approximately 2 hours. </p>
  </mm:group>
  </td></tr>
  <tr><td>
  <mm:group id="groupD" title="  By Plane">
     <p><strong>By Plane:</strong> The vast majority of foreign travellers
arrive in Moscow at Sheremetyevo Airport's Terminal 2. The building has a
reputation as a seedy place prowled by even seedier taxi drivers. Customs can
be an ordeal, smoking is ubiquitous and the taxi drivers are aggressive.</p>
  </mm:group>
  </td></tr>
  <tr><td>
  <mm:group id="footer" title="Footer">
    <h5>Copyright &copy; ABC Company Ltd.</h5>
  </mm:group>
  </td></tr></table>
</body></html></mm:page>
```

nav2.jsp

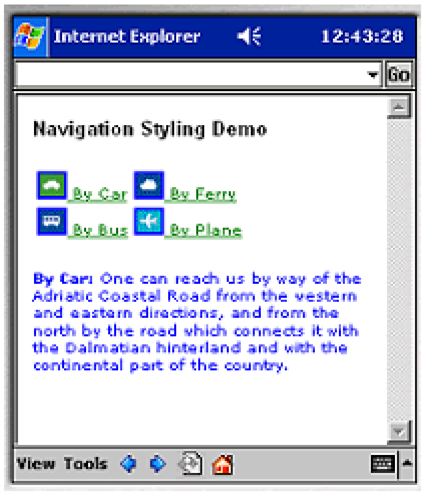
```
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page content="false">
<html>
<head>
<title>Nav Styling</title>
</head>
<body>
<mm:media-group id="car" style="display:none" alt="*">
       <mm:img where="ImgGIFSupported" src="img/car.gif" alt="*"/>
       <mm:img where="ImgWBMPSupported" src="img/car.wbmp" alt="*"/>
</mm:media-group>
<mm:media-group id="boat" style="display:none" alt="*">
       <mm:img where="ImgGIFSupported" src="img/boat.gif" alt="*"/>
       <mm:img where="ImgWBMPSupported" src="img/boat.wbmp" alt="*"/>
</mm:media-group>
<mm:media-group id="bus" style="display:none" alt="*">
       <mm:img where="ImgGIFSupported" src="img/bus.gif" alt="*" />
       <mm:img where="ImgWBMPSupported" src="img/bus.wbmp" alt="*"/>
</mm:media-group>
<mm:media-group id="plane" style="display:none" alt="*">
       <mm:img where="ImgGIFSupported" src="img/plane.gif" alt="*"/>
       <mm:img where="ImgWBMPSupported" src="img/plane.wbmp" alt="*"/>
</mm:media-group>
<mm:id-ref idref="header" />
<span><mm:structure id="pagination_str" where="IsPDA or IsMenuDriven"
navstyle="nav-format:table; nav-table-columns:2">
     <mm:group-ref idref="groupA" depth="0" display="headings" type="normal"
navstyle="nav-image:url(#car)"/>
     <mm:group-ref idref="groupB" depth="0" display="headings" type="normal"
navstyle="nav-image:url(#boat)"/>
     <mm:group-ref idref="groupC" depth="0" display="headings" type="normal"
navstyle="nav-image:url(#bus)" />
     <mm:group-ref idref="groupD" depth="0" display="headings" type="normal"
navstyle="nav-image:url(#plane)" />
  </mm:structure></span>
<mm:id-ref idref="footer" />
</body>
</html>
</mm:page>
```

mynavstyle.css

```
p {
       font-family: Verdana, Arial, Helvetica, sans-serif;
       font-size: 7pt;
       color: blue;
}
a { color: green; font-size: 7pt; }
h4 { color: black; font-size: 9pt; }
h5 { color: gray; font-size: 7pt; }
```

Results

PDA Navigation Styling on a PDA Browser



Navigation Styling Demo

By Car By Ferry
By Bus By Plane

By Car: One can reach us by way of the Adriatic Coastal Road from the western and eastern directions, and from the north by the road which connects it with the Dalmatian hinterland and with the continental part of the country.

Key Points

- The main content is separated from the styling and device-specific structuring. The file *nav1.jsp* contains the main content. The file *nav2.jsp* contains most of the instructions for WebLogic Mobility Server to create and style the navigation.

- In *nav2.jsp*, each image is placed inside a media-group which has its `style` attribute set to "display:none". This ensures that the image is not displayed in the position in the document that the media-group is located. Essentially, it means, "I will be using this image, but not just here".

```
<mm:media-group id="car" style="display:none" alt="*">
<mm:img where="ImgGIFSupported" src="img/car.gif" alt="*"/>
<mm:img where="ImgWBMPSupported" src="img/car.wbmp" alt="*"/>
</mm:media-group>
```

- Each media-group contains a choice of images. WebLogic Mobility Server will deliver the best image available to the requesting device. A GIF will be delivered for devices that support that image format. If the device doesn't support GIFs, but does support the WBMP format, the WBMP image will be sent to the device. If neither image is supported or available, WebLogic Mobility Server delivers the content of the media-group's `alt` attribute in the place of an image. The image files can be found in the tutorials Workshop project under **\ch4\img**.

- The `<mm:structure>` which is used to create the navigation contains the `navstyle` attribute which tells WebLogic Mobility Server to present the links in a two-column table.

```
<mm:structure id="pagination_str" where="IsPDA or
IsMenuDriven" navstyle="nav-format:table; nav-table-columns:2">
```

- The `navstyle` attribute of the `<mm:group-ref>` tells WebLogic Mobility Server which image to use next to each link. The `id` of the media-group containing the desired image is put in the `nav-image` property after a hash mark.

```
<mm:group-ref idref="groupA" depth="0" display="headings"
type="normal" navstyle="nav-image:url(#car)"/>
```

- In order to create the navigation menu, `set display="headings"` and `type="normal"`.

Things to Try

Try to create the following types of navigational styling:

Bullet Points

Place the same image next to each link by placing the image reference in the `<mm:structure>` tag. Put `bullet.gif` and `bullet.wbmp`**,** which can be found in the tutorials Workshop project under **\ch4\img**, into a media-group. Use the media-group's `id` attribute when referring to the image from the `<mm:structure>`.

```
<mm:structure id="pagination_str" where="IsPDA or IsMenuDriven"
navstyle="nav-format:table; nav-table-columns:2; nav-image:url(#bullet)">
```

Change the dimensions of the table using the `nav-table-columns` or `nav-table-rows` properties.

Text and Image

Change the way the image is displayed with the text by setting the properties of the `navstyle` attribute in the `<mm:structure>` tag.

```
<mm:structure id="pagination_str" where="IsPDA or IsMenuDriven"
navstyle="nav-format:table; nav-table-columns:2; nav-text-display:none">
```

Change the `nav-text-display` value to each of the following and view the results.

```
nav-text-display:none
nav-text-display:inline
nav-text-display:block
```

This section's example mark-up sends navigation to both PDAs and menu-driven devices. On smaller phones, the images and text may be too wide for the screen causing the links to wrap. Create a second `<mm:structure>` specifically for menu-driven devices (or devices with screen widths less than a certain width). Use the `nav-text-display:block` to place the text underneath the images.

Lists

Arrange menu items into either a `<br />` separated, a pipe-separated or a space-separated list by setting the following properties of the `<mm:structure> navstyle` attribute.

```
<mm:structure id="pagination_str" where="IsPDA or IsMenuDriven"
navstyle="nav-format:list; nav-list-style-type:pipe">
```

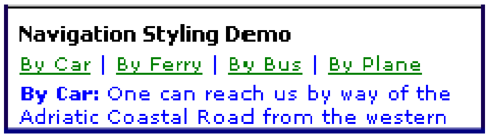
Change the `navstyle` value to each of the following and view the results.

```
navstyle="nav-format:list"
navstyle="nav-format:list; nav-list-item-display: inline"
navstyle="nav-format:list; nav-list-style-type: pipe"
```

Examples

- navstyle="nav-format:list; nav-list-item-display:inline; nav-text-display:pipe"

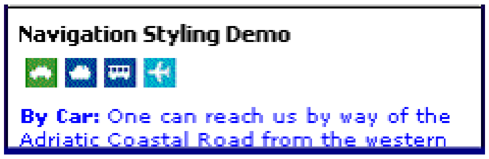
  Navigation Menu Styled as Pipe-Separated Inline List

  Navigation Styling Demo
  By Car | By Ferry | By Bus | By Plane
  By Car: One can reach us by way of the Adriatic Coastal Road from the western

- navstyle="nav-format:table; nav-table-columns:4; nav-text-display:none"

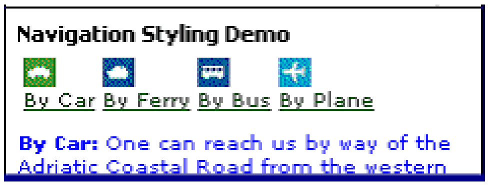
  Navigation Menu Styled as Table of Icons Without Text

  Navigation Styling Demo
  By Car: One can reach us by way of the Adriatic Coastal Road from the western

- navstyle="nav-format:table; nav-table-columns:4; nav-text-display:block"

  Navigation Menu Styled as Table of Icons with Text

  Navigation Styling Demo
  By Car By Ferry By Bus By Plane
  By Car: One can reach us by way of the Adriatic Coastal Road from the western

The “where” Attribute

Most of the examples in this manual so far have made use of the `where` attribute to direct the content of your web page towards either a “full browser” (for example a PC), a PDA, or a device classified as “menu-driven” (for example a mobile phone). For example:

```
<mm-include where=”IsFullBrowser”>
```

or

```
<mm-structure id=”structure_1”  where=”IsMenuDriven”>
```

By allowing conditional logic (and, or, not) and comparison operators (==, <>, >, <, >=, <=), WebLogic Mobility Server has expanded the functionality of the `where` attribute to allow you to have finer control over the types of devices that you want to target.

The where attribute can be applied to the following tags:

```
<mm-include>
<mm-exclude>
<mm-structure>
<mm-layout>
<mm-img>
<mm-table-model>
```

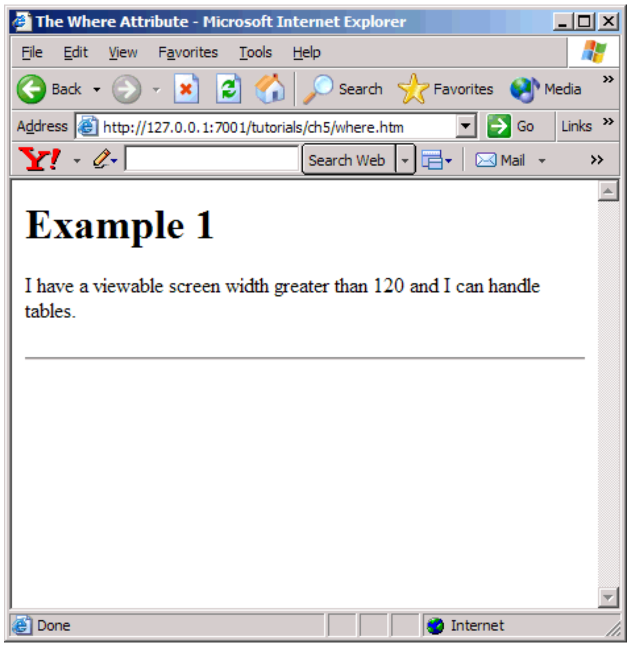
In order to do the next example, you will need a WAP emulator to view the results of your code. The tutorial file used in this section can be found in the tutorials Workshop project under **\ch5**.

Example of the “where” Attribute

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">
<html>
<head><title>The Where Attribute</title></head>
<mm-structure id="include-and1" where="IsMenuDriven">
  <mm-group-ref idref="message-include-and" type="normal" depth="flat"
  display="all" />
</mm-structure>
<body>
  <mm-group id="message-include-and" title="Message-include-and">
    <mm-head id="message-head-include-and" useradded="yes">MENU-DRIVEN BROWSER
    </mm-head>
    <mm-body idref="message-head-include-and" id="message-body-include-and">
      <p>
      <h1>Example 1</h1>
      <mm-include where="UAProf.BrowserUA.TablesCapable and UsableWidthPixels >
      120">
       <p> I have a viewable screen width greater than 120 and I can handle
      tables.</p>
      </mm-include>
      <mm-include where="ScreenOrientation=='portrait' and UsableWidthPixels ==
      120">
        <br />I have a portrait screen orientation and a usable screen width of
     exactly 120 pixels. <br />
      </mm-include>
      <mm-include where="not DeviceName.endswith('4')">
        <br />My device name DOESN'T end in a 4.<br />
      </mm-include>
      <hr />
      </p>
    </mm-body>
  </mm-group>
</body>
</html>
```

The results are shown in the following graphics.

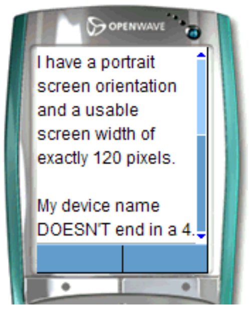
‘where’ Example on PC Browser


The Where Attribute - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://127.0.0.1:7001/tutorials/ch5/where.htm Go Links
Search Web Mail
Done Internet

Example 1

I have a viewable screen width greater than 120 and I can handle tables.

‘where’ Example on a Menu-Driven Browser

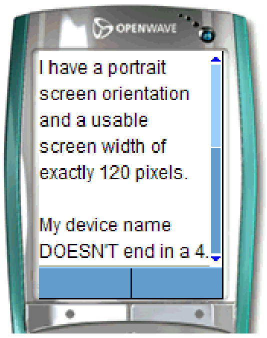


I have a portrait screen orientation and a usable screen width of exactly 120 pixels.

My device name DOESN'T end in a 4.

Image Courtesy of Openwave Systems Inc

‘where’ Example on a PDA Browser



I have a portrait screen orientation and a usable screen width of exactly 120 pixels.

My device name DOESN'T end in a 4.

Image Courtesy of Openwave Systems Inc

Use “where” with CC/PP Attributes

If you are using the CC/PP attributes (the ones that begin with the prefix “UAProf”), you must include the entire prefix in the “where” condition.

For example, where=”not UAProf.HardwarePlatform.ColorCapable”

Note: Some attributes have a hyphen as part of their name (for example UAProf.PushCharacteristics.Push-Accept). Because Python interprets the hyphen as a minus symbol, if you are using one of these attributes in a where condition, you must replace the hyphen with an underscore.

Other Use Cases

Here are some examples of other ways in which the `where` attribute can be used.

```
where=”IsMenuDriven or MLVersion==’WML1.1’”
where=”UAProf.HardwarePlatform.InputCharSet==’UTF-8’”
where=”UsableWidthPixels == 200”
where=”DeviceName==’Nokia3330’”
where=”UsableWidthPixels < 200 and not IsPortraitPDA”
where=”(UsableWidthPixels < 200 and UsableHeightPixels < 300) or IsPortraitPDA”
```

Remember that the `where` attribute is compatible with the Python scripting language. This means that “==“ and lowercase “or” are preferable within the attribute value string. However, for the purpose of backwards compatibility, the single “=“ and uppercase “OR” are supported but they have been deprecated.

Note: The “where” clause quoted string must not contain line breaks.

For more information on the `where` attribute, see the section “Creating Conditional Content” in the *BEA WebLogic Mobility Server User Guide.*

Basic Forms

This section introduces the basic steps required for working with forms and delivering them to different devices.

Processing Forms

There are four key points to remember if you are processing your forms on a menu-driven device.

- Since you need to use server-side processing, you will have to use JSP methods.
- The form must be wrapped within an `<mm-group>` so it can be delivered to a menu-driven device.
- The group wrapping the form must be referenced from within an `<mm-structure>` tag.
- Any output from the JSP page needs to be wrapped within an `<mm-group>` if you want this content available to menu-driven devices. The JSP page will also require the appropriate `<mm-structure>` and `<mm-group-ref>` references.

Note: It is recommended that authors use method="post" on medium or large sized forms. The use of method="get" causes the form input to be added onto the end of the URL of the script file. The length of this URL may be too long for some of the smaller devices to handle.

Deliver a Form to a Menu-Driven Device

This project illustrates how to deliver a simple form to a menu-driven device and pass it to a JSP script for processing. The form will contain a set of choices, one of which will be created dynamically using JSP.

For this project, the processing will be a simple text message to indicate that the JSP script has been called.

The main page contains the form and the script page for processing the form.

Simple Form on a Menu-Driven Device

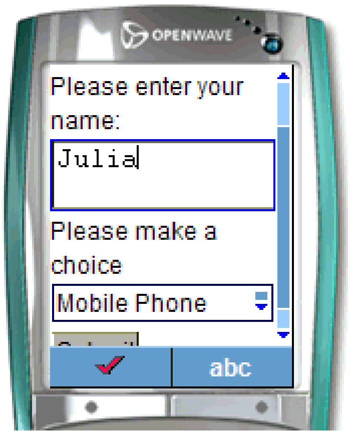


Image Courtesy of Openwave Systems Inc

The files for this tutorial are located in the tutorials Workshop project under \ch6.

The main page (*formdemo.jsp*) page is a JSP page in which mmXHTML instead of the JSP taglib is used. This is merely to demonstrate that the mmXHTML mobility tags can be used inside a JSP page.

Remember to keep your document “well-formed”.

There are a few points to observe in this form:

- The elements in the form should all be in lowercase
- The attributes should be lowercase and their values should be within quotes
- The input statements are empty tags, so they must be closed off with “/”
- The option elements require a closing tag
- The action requires JSP processing, not JavaScript
- The form is wrapped in an `<mm-group>` tag ensuring the form is contained within the `<mm-body>` element
- The group is referenced from within an `<mm-structure>` for delivery to menu-driven channels.

The Processing Page

The code for the processing page is found in the file called *processform.jsp*.

A simple message is displayed when the form is processed:

“Your form has been submitted”

The display message is also wrapped within an `<mm-group>` tag. This group is also referenced from within an `<mm-structure>`.

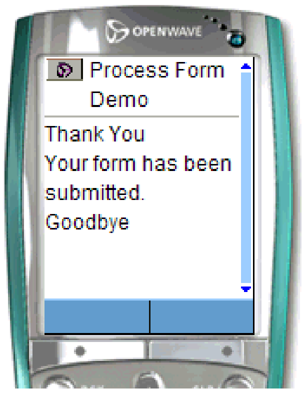
formdemo.jsp

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/ DTD/mmxhtml_1.2.dtd">
<html>
<head><title> Form Demo</title></head>
<!-- Display the output on a wml device -->
<mm-structure id="st_202" where="IsMenuDriven">
    <mm-group-ref idref="gp_202" depth="flat" type="normal" display="all"/>
</mm-structure>
<body bgcolor="#FFFFFF" text="#000000">
<mm-group id="gp_202" title="Form Input">
    <mm-head id="hd_202" useradded="yes"><p>Form</p></mm-head>
    <mm-body id="bd_202" idref="hd_202">
      <form method="post" action="/tutorials/ch6/processform.jsp">
        <p>Please enter your name:</p>
        <input name="name" type="text" size="15" />
        <p>Please make a choice</p>
        <select name="menu_choice" size="1">
            <option value="phone">Mobile Phone</option>
            <option value="laptop">Laptop Computer</option>
           <!-- Use JSP to output part of the form -->
           <%
            out.println("<option value=\"organiser\">Personal
            Organiser</option>");
           %>
        </select>
        <p><input type="submit" value="Submit" /></p>
      </form>
    </mm-body>
</mm-group></body></html>
```

processdemo.jsp

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">
<html>
<head>
<title>Process Form Demo</title></head>
<!-- You need an mm-structure if you want to display output -->
<mm-structure id="st_500" where="IsMenuDriven">
	<mm-group-ref idref="gp_300" depth="flat" type="normal" display="all"/>
</mm-structure>
<body>
<mm-group id="gp_300" title="Process Form">
	<mm-head id="hd_300" useradded="yes"><p>Thank You</p></mm-head>
	<mm-body id="bd_300" idref="hd_300">
	<p>Your form has been submitted.</p>
	<p>Goodbye</p>
	</mm-body>
</mm-group>
</body>
</html>
```

Results of Form Submission



Process Form Demo

Thank You

Your form has been submitted.

Goodbye

Image Courtesy of Openwave Systems Inc

Processing the Form

This tutorial illustrates how to retrieve and respond to information passed from the form on the request page using the JSP request object.

About JSP Request Objects

JSP containers provide a number of services to web applications. These services are exposed through a number of objects that are available to JSP page developers.

One of these objects - the request object - provides access to information supplied in client requests. One of the services it provides is access to request parameters.

In this project, you will use the request object and two of its methods, `getParameterNames` and `getParameterValues` to retrieve the information from the form.

The tutorial file used in this section can be found in the tutorials Workshop project under **\ch6**.

The Form Page

This page is similar to the last tutorial except the menu choices are generated using JSP.

formdemo2.jsp

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">
<%@ page import="java.util.*" %>
<html>
<head><title>Form Demo</title></head>
<mm-structure id="st_202" where="IsMenuDriven">
       <mm-group-ref idref="gp_202" depth="flat" type="normal" display="all"/>
</mm-structure>
<body>
<mm-group id="gp_202" title="Form Input">
       <mm-head id="hd_202" useradded="yes"><p>Form</p></mm-head>
       <mm-body id="bd_202" idref="hd_202">
       <form method="post" action="/tutorials/ch6/processform2.jsp">
       <p>Please enter your name:</p>
       <input name="Name" type="text" size="15" /><br/>
       <p>Please make a choice</p>
       <select name="Choice" size="1">
<%
       out.println("<option value=\"phone\">Mobile Phone</option>");
       out.println("<option value=\"laptop\">Laptop Computer</option>");
       out.println("<option value=\"organiser\">Personal Organiser</option>");
%>
       </select>
       <p><input type="submit" value="Submit" /></p>
       </form>
       </mm-body>
</mm-group></body></html>
```

The Process Page

The following code illustrates what is required to process this form.

formprocess2.jsp

```
<?xml version="1.0"?>
<!DOCTYPE html PUBLIC "-//MOBILEAWARE//DTD MMXHTML 1.2//EN"
"http://www.mobileaware.com/DTD/mmxhtml_1.2.dtd">

<html>
<head>
<title>Form Processing Demo</title></head>
<mm-structure id="st_500" where="IsMenuDriven">
       <mm-group-ref idref="gp_300" depth="flat" type="normal" display="all"/>
</mm-structure>
<body>

<mm-group id="gp_300" title="Process Form">
<mm-head id="hd_300" useradded="yes"><p>Thank You</p></mm-head>
<mm-body id="bd_300" idref="hd_300">

<p>Here are the values you submitted:</p>
<% java.util.Enumeration e = request.getParameterNames();
       while (e.hasMoreElements()) {
       String paramName = (String)e.nextElement();
       String[] paramValues = request.getParameterValues(paramName);
%>
<br />
<%= paramName %>:
<% for (int i=0; i < paramValues.length; i++) {
%>
<%= paramValues[i] %>
<% }
}
%>
</mm-body>
</mm-group>
</body>
</html>
```

Parameter names are retrieved using the request object and stored in an enumerated list.

```
request.getParameterNames();
```

The retrieved values are stored in an Enumeration

```
java.util.Enumeration e = ...
```

The enumerated list is iterated through to retrieve the parameter name.

```
java.util.Enumeration e = ...
```

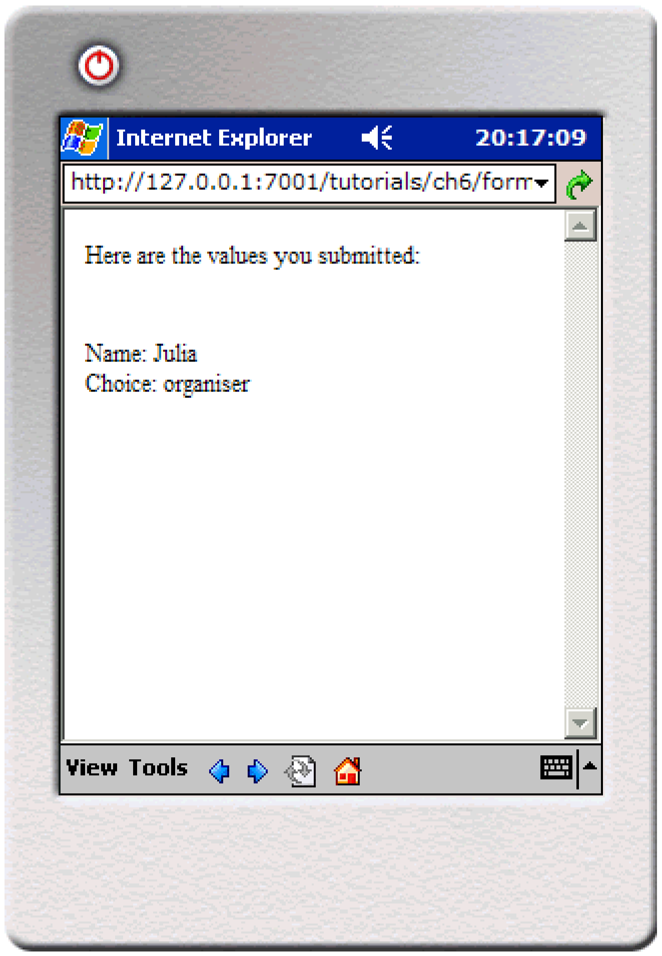
The paramName is used to retrieve its value from the request object, storing the information in a String array

```
String [] paramValues = request.getParameterValues(paramName);
```

Results

Point your browser at the new form page and experiment with the different values and the submit button to confirm it is working correctly.

Form Processing Demo



Here are the values you submitted:

Name: Julia
Choice: organiser

Working with the CC/PP Delivery Context API

This section introduces the JSR188 delivery context API and explains how to use its methods to retrieve CC/PP attributes from the Device Repository. Accessing these attributes allows developers to fine-tune their content to specific characteristics of the requesting device.

The complete list of attributes is available in “Appendix A – Device Attributes” in the *BEA WebLogic Mobility Server Administration Guide.* A full explanation of CC/PP and device profiles is available in “Working with the Delivery Context API” in the *BEA WebLogic Mobility Server User Guide.*

About the Delivery Context API

JSR188 is a standard set of APIs developed by the Java Community to access delivery context information. It is these methods that developers can use to query the MIS database to gain access to the CC/PP delivery context information.

Creating a Device Profile

This tutorial shows you how to access a device profile by creating a Profile object that contains the information about the requesting device. The `getAttribute` method gets the value of a particular attribute. This value will then be displayed on screen. The value will apply to the type of device that is requesting the page.

View the results of this tutorial on a variety of device types.

The tutorial file used in this section can be found in the tutorials Workshop project under **\ch7**.

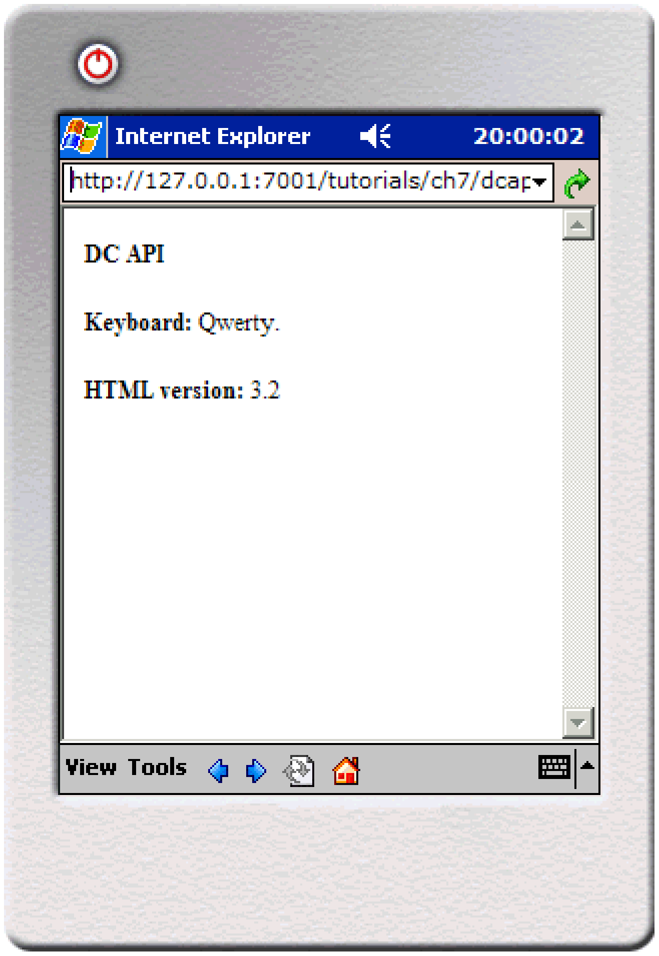
dcapi.jsp

```
<%@ page contentType="text/html; charset=iso-8859-1"
import="javax.ccpp.*" %>
<%@ taglib uri="mmJSPtaglib" prefix="mm"%>
<mm:page>
<%
Attribute keyboard = null;
Attribute htmlVersion = null;
String keyboardStr = "";
String htmlVersionStr = "";
ProfileFactory pf = ProfileFactory.getInstance();
Profile myProf = null;
if (pf == null) {
  System.out.println("Cannot create ProfileFactory instance.");
}
else {
  myProf = pf.newProfile(request);
  if(myProf==null) {
    System.out.println("Cannot create Profile instance.");
  }
  keyboard = myProf.getAttribute("Keyboard");
  htmlVersion = myProf.getAttribute("HtmlVersion");
 keyboardStr = keyboard.getValue()==null?"No
Value":keyboard.getValue().toString();
 htmlVersionStr = htmlVersion.getValue()==null?"No
Value":htmlVersion.getValue().toString();
}
%>
<html>
<head> <title>DC API</title></head>
<mm:structure id="str1" where="IsMenuDriven">
```

```
  <mm:group-ref idref="gp1" depth="flat" type="normal" display="all"/>
</mm:structure>
<body>
  <mm:group id="gp1" title="API">
    <mm:head id="hd1"useradded="no"><b>DC API</b></mm:head>
    <mm:body id="bd1" idref="hd1">
      <p><strong>Keyboard: </strong>
      <%= keyboardStr %>.</p>
      <p><strong>HTML version: </strong>
      <%= htmlVersionStr%></p>
    </mm:body>
  </mm:group>
</body></html>
</mm:page>
```

Point your browser (either a PDA browser or phone emulator) at the file to see the results.

Delivery Context Information on PDA Browser

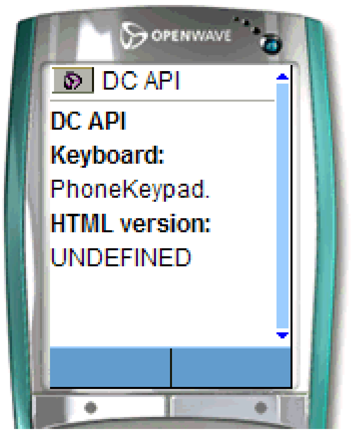


DC API

Keyboard: Qwerty.

HTML version: 3.2

Delivery Context Information on Phone Browser



DC API
Keyboard:
PhoneKeypad.
HTML version:
UNDEFINED

Image Courtesy of Openwave Systems Inc

Key Points

In order to use the JSR188 API, you must first import the package that allows access to the methods.

```
<%@ page contentType="text/html; charset=iso-8859-1" import="javax.ccpp.*" %>
```

Initialize the variables needed for this example.

```
Attribute keyboard = null;
Attribute htmlVersion = null;
String keyboardStr = "";
String htmlVersionStr = "";
```

Create the Profile object that contains the information about the requesting device. This is done in two steps. First obtain an instance of a ProfileFactory object.

```
ProfileFactory pf = ProfileFactory.getInstance();
```

If an instance of a ProfileFactory can't be created, this method will return null. Check for null before proceeding. Then, from this ProfileFactory object, create the device Profile object.

```
myProf = pf.newProfile(request);
```

The next step is to get the required attribute from the Profile. To display the attribute value, use the method getAttribute.

```
keyboard = myProf.getAttribute("Keyboard");
htmlVersion = myProf.getAttribute("HtmlVersion");
```

```
Get the value from the Attribute and turn it into a string ready to be
displayed on screen. If the value is null, the message “No value” should be
displayed.
keyboardStr = keyboard.getValue()==null?"No
      Value":keyboard.getValue().toString();
htmlVersionStr = htmlVersion.getValue()==null?"No
       Value":htmlVersion.getValue().toString();
```

The final step displays the attribute values in the HTML display that is sent to the screen of the requesting device.

```
<p><strong>Keyboard: </strong><%= keyboardStr %>.</p>
<p><strong>HTML version: </strong><%= htmlVersionStr%></p>
```