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Developer's Guide

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Glossary

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Preface

This manual describes how to build portlets for Oracle Application Server Portal (OracleAS Portal) using a variety of tools and technologies. This manual includes information that helps you understand the various technology choices open to you, choose the technology that best meets your requirements, and use the appropriate tools to build and deploy your portlets.

Intended Audience

This manual is intended primarily for portal developers, but page designers may also find it useful. This manual guides you through the process of first understanding and choosing a portlet technology, and then building your portlets with that technology.

What Is a Portal Developer? A portal developer is a user who writes code to help make a portal meet the specific requirements of an organization. For example, a portal developer may build portlets and make them available to page designers and other users for inclusion on their pages. This type of portal developer is also referred to as a portlet developer. A portal developer may also use the public APIs provided with OracleAS Portal to perform certain portal tasks programmatically, rather than through the product's user interface. A portal developer will generally, although not always, be someone with at least some programming knowledge. The privileges assigned to a portal developer depend on the type of tasks that developer performs.

Note: Examples of how to use APIs to perform content management tasks will be provided soon on Portal Center (<http://portalcenter.oracle.com>) and will be incorporated into a later release of this guide.

What Is a Portlet Developer? A portlet developer is a user with the following global privileges: Create All Portal DB Providers and Manage All Shared Components. Since OracleAS Portal offers such a wide spectrum of tools and technologies for building portlets, a portlet developer may or may not have substantial programming background.

What Is a Page Designer? A page designer, also known as a page manager, is a user with the Manage privilege on a page. A user with this privilege can perform any action on the page and can create sub-pages under the page. The page designer is often responsible for designing the layout (or region configuration) of the page and assigning privileges on the page to other users (for example, to determine who can add content to the page).

The scope of a page designer's control over a page may be limited if the page is based on a template.



For information about the different privileges in OracleAS Portal and how these affect the tasks you can perform, see the *Oracle Application Server Portal User's Guide* on the OracleAS Portal Documentation page on OTN (<http://www.oracle.com/technology/products/ias/portal/documentation.html>).

Note: For the portable document format (PDF) version of this manual, when a URL breaks onto two lines, the full URL data is not sent to the browser when you click it. To get to the correct target of any URL included in the PDF, copy and paste the URL into your browser's address field. In the HTML version of this manual, you can click a link to directly display its target in your browser.

Documentation Accessibility

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TTY Access to Oracle Support Services

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Related Documents

For more information, see the following manuals in the OracleAS Portal documentation set:

- *Oracle Application Server Portal Release Notes*
- *Oracle Application Server Portal User's Guide*

- *Oracle Application Server Portal Configuration Guide*
- *Oracle Application Server Portal Error Messages Guide*

Note: You can find all documentation related to OracleAS Portal on the OracleAS Portal Documentation page on OTN (<http://www.oracle.com/technology/products/ias/portals/documentation.html>)

You may also find the following manuals in the Oracle Application Server documentation set useful:

- *Oracle Application Server Concepts*
- *Oracle HTTP Server Administrator's Guide*
- *Oracle Application Server Web Cache Administrator's Guide*
- *Oracle Application Server Web Toolkit Reference*

Note: You can find documentation related to Oracle Application Server on OTN (<http://www.oracle.com/technology/documentation/index.html>).

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.
< >	Angle brackets enclose user-supplied names.
[]	Brackets enclose optional clauses from which you can choose one or none.
...	Ellipsis points in an example mean that information not directly related to the example has been omitted.
ORACLE_HOME	Represents the full path of the Oracle home, and is used where it is easy to determine which Oracle home is referenced.
MID_TIER_ORACLE_HOME	Represents the full path of the middle-tier Oracle home, and is used where it is necessary to distinguish between the middle tier, Oracle Application Server Infrastructure, or Oracle Application Server Metadata Repository.
INFRA_ORACLE_HOME	Represents the full path of the Oracle Application Server Infrastructure Oracle home, and is used where it is necessary to distinguish between the middle tier, Oracle Application Server Infrastructure, or Oracle Application Server Metadata Repository.

Convention	Meaning
METADATA_REP_ ORACLE_HOME	Represents the full path of the OracleAS Infrastructure home containing the Oracle Application Server Metadata Repository, and is used where it is necessary to distinguish between the middle tier, Oracle Application Server Infrastructure, or Oracle Application Server Metadata Repository.

Browser Recommendations

Use one of the following Web browsers with OracleAS Portal:

- Microsoft Internet Explorer 6.0
- Netscape 7.2
- Mozilla 1.7
- Firefox 1.0
- Safari 1.2

You may encounter JavaScript errors if you use a browser older than the recommended minimum.

Cache Settings

Your browser's default settings are sufficient for displaying valid portal content. If those defaults have been altered, you should check that their values do not inadvertently disable valuable cache capabilities. To check your browser's cache settings, perform the following steps:

In Internet Explorer:

1. From the Tools menu, choose **Internet Options**.
2. Click the **General** tab to bring it forward.
3. In the Temporary Internet File section, click the **Settings** button.
4. In the **Check for newer versions of stored pages** radio group, select **Automatically**.

This is the default option. You can also select **Every visit to the page** or **Every time you start Internet Explorer**.

Note: Do not select **Never**. Selecting **Never** means the browser will never check for newer versions of stored pages, and the cache will never be updated.

5. Click **OK**.
6. Click **OK**.

In Netscape/Mozilla:

1. From the Edit menu, choose **Preferences**.
2. Expand the **Advanced** node.
3. Click **Cache**.

4. In the **Document in cache is compared to document on network** radio group, select **When page is out of date**.

This is the default setting. You can also select **Every time I view the page** or **Once per session**.

Note: Do not select **Never**. Selecting **Never** means the browser will never check for newer versions of stored pages, and the cache will never be updated.

5. Click **OK**.

Image Settings

Sometimes the browser setting that controls the automatic loading of images is disabled to increase performance on low bandwidth connections. A problem that commonly occurs when images are not loaded automatically is that, once logged out, you cannot log in again without closing and re-invoking the browser. To avoid this problem, make sure images are loaded automatically.

To ensure that images are loaded automatically:

In Internet Explorer:

1. From the Tools menu, choose **Internet Options**.
2. Click the **Advanced** tab to bring it forward.
3. Scroll through the list of options to the Multimedia node, and select **Show Pictures**.
4. Click **OK**.

In Netscape:

1. From the Edit menu, choose **Preferences**.
2. Click **Advanced**.
3. Select the **Automatically load images** check box.
4. Click **OK**.

Part I

Portlet Overview

Part I contains the following chapters:

- [Chapter 1, "Understanding Portlets"](#)
- [Chapter 2, "Portlet Technologies Matrix"](#)

Understanding Portlets

This chapter introduces you to portlets, the anatomy of a portlet, and provides an overview of the various portlet-building tools available in Oracle Application Server Portal:

- [Introduction to Portal Development](#)
- [Understanding Portlets](#)
- [Portlet Anatomy](#)
- [Portlet Resources](#)

1.1 Introduction to Portal Development

OracleAS Portal enables you to present information from multiple, unrelated data sources in one, organized view. This view, a portal page, can contain one or more components—called *portlets*—that can each get their content from different data sources.

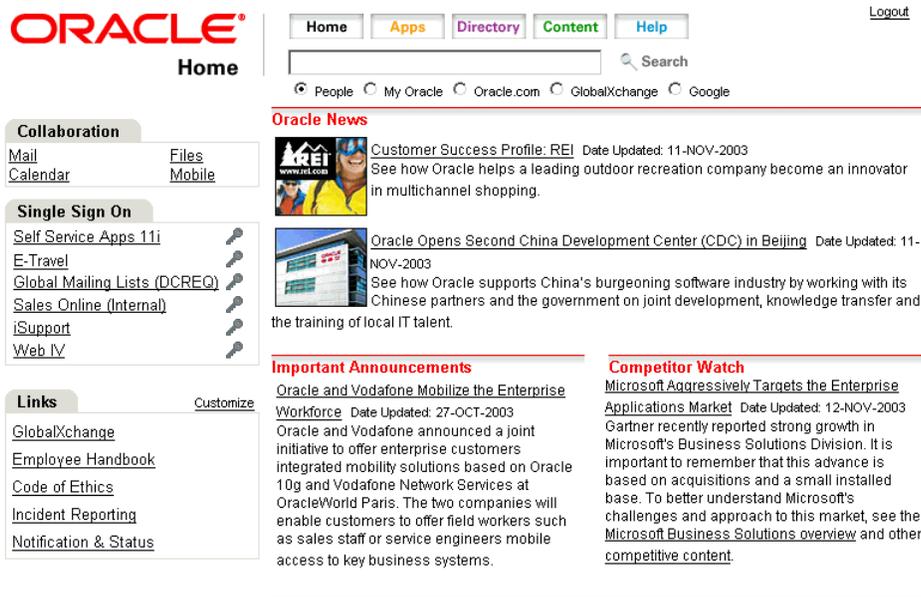
OracleAS Portal has all the tools you need for developing portlets and adding them to your portal pages. OracleAS Portal's tools support a wide range of development skills: from the novice business developer to the experienced IT programmer. You can develop portlets either declaratively, through the OracleAS Portal user interface, or programmatically, through OracleAS Portal's collection of application programming interfaces (APIs), known as the Oracle Application Server Portal Developer Kit (PDK). Additionally, you can develop portlets through other development tools, external to OracleAS Portal, and integrate them through the PDK and an OracleAS Portal entity called a *provider*. To learn more about providers, refer to [Chapter 2, "Portlet Technologies Matrix"](#).

This chapter defines portlets, lists and describes some sources for pre-built portlets and resources for building portlets, and suggests the best resource for the job.

1.2 Understanding Portlets

A portlet is a reusable, pluggable Web component that can draw content from many different sources. A typical portlet is one that displays summaries of Web content.

Figure 1–1 Portlets on the My Oracle Home Page



For example, in your portal you may have a news feed portlet that supplies linked news article headlines that are each accompanied by a sentence describing the content of the article (Figure 1–2).

Figure 1–2 The Oracle News Portlet on the My Oracle Home Page



Users click the linked headlines to get to the full text of the article, which is hosted on an external news service (Figure 1–3). The portlet has a somewhat dynamic nature in that headlines change automatically as news stories are added and removed at the source.

Figure 1–3 Content Target from a Portlet Link

The screenshot shows a web page with a header containing 'MyOracle', 'Oracle.com', and 'Contact In the Know'. Below the header is a navigation bar with 'In the Know' and 'ORACLE In the Know ezine'. The main content area is divided into two columns. The left column contains a navigation menu with links such as 'In the Know PeopleSoft Special Edition', 'In the Know Home', 'Top Stories', 'Customer Success Profile: REI', 'In Depth Story', 'IDC: Critical to Oracle's Global Teamwork', 'FYI', 'Oracle UK Offers Green Transport Alternatives to Employees', and 'In the Know Standard Edition Archives'. The right column features a 'Customer Success Profile: REI' article. The article includes a REI logo, a brief introduction, a detailed paragraph about REI's online sales and database usage, a navigation bar for 'REI.com', 'REI-OUTLET.com', 'REI Adventures', and 'Stores & Events', four product images (backpacks, a watch, a phone, and a water bottle), and a concluding paragraph about REI's database migration to Oracle9i Database with Real Application Clusters (RAC).

Portlets provide a seamless, single view of data that originates from multiple sources. Since different portlets can be placed on a common page, the user receives a single-source experience. In reality, the content is derived from multiple sources.

Portlets display excerpts of other Web sites, generate summaries of key information, perform searches, and access assembled collections of information from a variety of data sources.

1.3 Portlet Anatomy

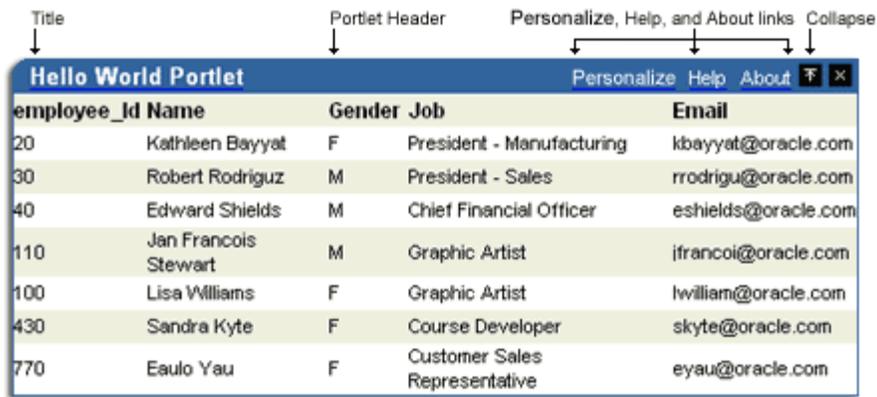
A portlet on a page is rendered in an HTML table cell. A portlet can display various types of content, such as HTML, formatted text, images, or elements of an HTML form.

Figure 1–4 shows the anatomy of a portlet, which includes a header that contains the portlet title. You can create a hyperlink in the portlet title, so that when a user clicks the title, the portlet displays in a full browser page. A portlet can also include a border, to distinguish the layout from other portlets on the page.

Portlets typically contain a Personalize link. The portlet developer can expose this link to the page designer, who can then turn these on or off. Clicking the Personalize link displays a number of options where the end user can personalize various attributes of the portlet.

Each portlet also contains a refresh icon, which the end user can click to refresh the content of the portlet (without refreshing the entire portal page), as well as the standard collapse icon, which the end user can click to collapse or expand the portlet on the page.

Figure 1–4 Portlet Anatomy



1.4 Portlet Resources

Portlet resources include the many pre-built portlets available out of the box from many sources, including OracleAS Portal, Oracle E-Business Suite, and third-party sources. Portlet resources also include portlet-building tools available through the OracleAS Portal user interface as well as from the PDK and other Oracle tools. Each of these tools offers different product features that are targeted towards different developer roles.

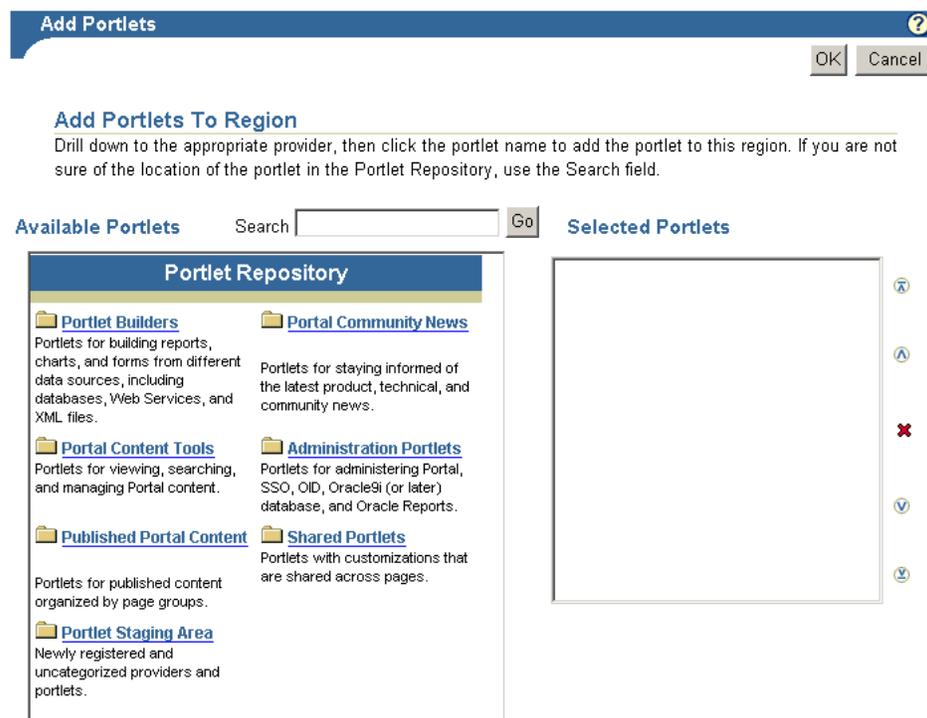
This section describes different portlet resources, suggests the level of expertise required to use them, and provides examples of when they might best be used. It includes the following subsections:

- [Out-of-the-Box Portlets](#)
- [Other Sources of Pre-Built Portlets](#)
- [Web Clipping](#)
- [OmniPortlet](#)
- [Portlet Builder](#)
- [Programmatic Portlets](#)

This section introduces you to the various portlet resources. For specific information on each tool and its benefits, refer to [Chapter 2, "Portlet Technologies Matrix"](#).

1.4.1 Out-of-the-Box Portlets

Figure 1–5 The Portlet Repository



What Are They?

Out-of-the-box portlets are fully developed, registered portlets that are immediately available from the Portlet Repository when you install OracleAS Portal (Figure 1–5). They include such portlets as Search, Saved Searches, Favorites, and My Notifications.

You'll find information on the pre-built portlets in OracleAS Portal in the *Oracle Application Server Portal User's Guide*, available on the Oracle Application Server documentation CD and on the OracleAS Portal Documentation page on OTN (<http://www.oracle.com/technology/products/ias/portal/documentation.html>).

Who Is the Intended User?

Out-of-the-box portlets are best suited for use by end users and page designers, though they are available to users at all levels of expertise.

When Should They Be Used?

Use out-of-the-box portlets when your needs are satisfied by the functions the portlets offer, and the level of personalization readily available is sufficient to complete the desired task.

Consider alternatives when you need to extend or personalize the portlet, such as when you need a different user interface, or when the functionality you require is not available out of the box.

For more information on when you should use each technology, refer to [Chapter 2, "Portlet Technologies Matrix"](#).



1.4.2 Other Sources of Pre-Built Portlets

What Are They?

Other sources of pre-built portlets include partner portlets, integration solutions, and the Portal Knowledge Exchange.



Partner portlets are available through Oracle's partnerships with different types of leading system integrators, software vendors, and content providers. You can access these portlets through the Portal Catalog, available on Portal Center (<http://portalcenter.oracle.com>). Examples of these include portlets for:

- Generating point-to-point driving directions
- Accessing IT information from a wide variety of sources
- Viewing summary information on news, stocks, and weather

Portal Center also provides integration solutions that are useful for customers who require basic functionality for popular applications such as Microsoft Exchange, Lotus Notes, SAP, IMAP, SMTP, and the like.

The Portal Knowledge Exchange, also accessible on Portal Center, is an offering from Portal Developer Services. Community members exchange portal expertise that includes portlet samples, tips, white papers, sample code, and so on. Members receive a personal folder on Portal Center, which they can use to upload portlet code and portal development insights and download and rate contributions from other developers.

Who Is the Intended User?

Fully developed, downloadable portlets are best suited for use by end users and page designers who understand how to download, install, and register Web and database providers in OracleAS Portal. They are available for use by all levels of experience.

When Should They Be Used?

As with out-of-the-box portlets, use pre-built portlets from other sources when your needs are satisfied by the functions the portlets offer, and the level of personalization readily available is sufficient to complete the desired task.

Consider alternatives when you need to extend or personalize the portlet, for example, when you need a different user interface or when the functionality you require is not available out of the box.

1.4.3 Web Clipping

What Is It?

Web Clipping is a browser-based declarative tool that enables you to integrate any Web application with OracleAS Portal. It is designed to give you quick integration by leveraging the Web application's existing user interface. Web Clipping has been implemented as a Web provider using the PDK-Java, which is a component of OracleAS Portal.

To create a Web Clipping portlet, the portal page designer uses a Web browser to navigate to the Web page that contains the desired content. Through the Web Clipping Studio, the page designer can drill down through a visual rendering of the target page to choose the desired the content ([Figure 1-6](#) and [Figure 1-7](#)).

Figure 1–6 Selecting Web Content through the Web Clipping Studio

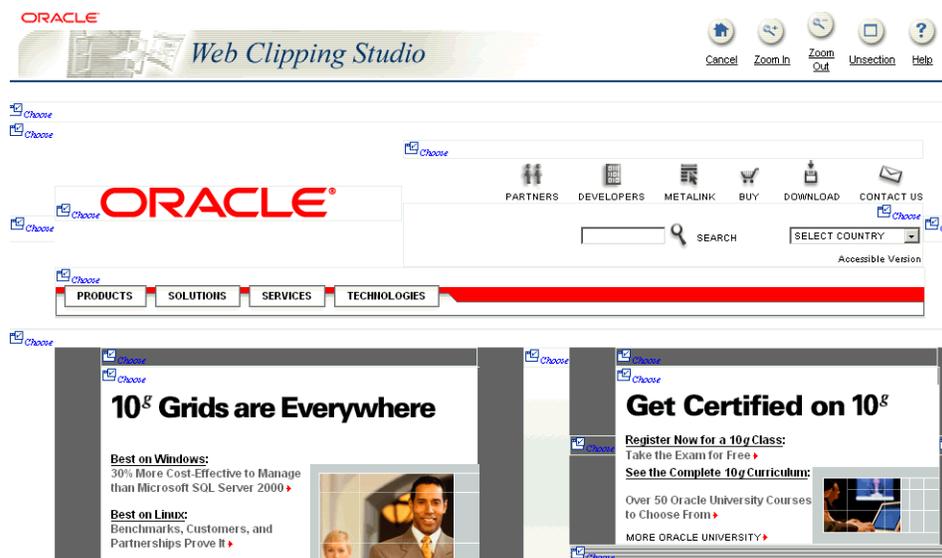


Figure 1–7 Clipped Content Rendered as a Portlet in Portal



Web Clipping supports:

- **Navigation through various styles of login mechanisms**, including form- and JavaScript-based submission and HTTP Basic and Digest Authentication with cookie-based session management.
- **Fuzzy matching of clippings**. If a Web clipping gets reordered within the source page or if its character font, size, or style changes, it will still be identified correctly by the Web Clipping engine and delivered as the portlet content.
- **Reuse of a wide range of Web content**, including basic support of pages written with HTML 4.0.1, JavaScript, applets, and plug-in enabled content, retrieved through HTTP GET and POST (form submission).
- **Personalization**, allowing a page designer to expose input parameters that page viewers can modify when they personalize the portlet. These parameters can be exposed as public parameters that a page designer can map as OracleAS Portal page parameters. This feature enables end users to obtain personalized clippings.
- **Integrated authenticated Web content through Single Sign-On**, including integration with external applications, which enables you to leverage Oracle

Application Server Single Sign-On and to clip content from authenticated external Web sites.

- **Inline rendering**, enabling you to set up Web Clipping portlets to display links within the context of the portlet. As a result, when a user clicks a link in the Web Clipping portlet, the results display within the same portlet. You can use this feature with internal and external Web sites.
- **Proxy Authentication**, including support for global proxy authentication and per-user authentication. You can specify the realm of the proxy server and whether all users will automatically log in using a user name and password you provide, each user will log in using an individual user name and password, or all users will log in using a specified user name and password.
- **Migration from URL-based portlets**, enabling you to migrate your URL-based portlets to Web Clipping.

Who Is the Intended User?

Web Clipping is best suited for use by page designers and portlet developers who want to leverage an existing Web page for rapid portlet development. The Web Clipping portlet is accessible out of the box, and is available in the Portlet Repository of OracleAS Portal. This portlet can be added to a page by any user with the appropriate privileges.

When Should It Be Used?

Use Web Clipping when you want to copy content and functionality from an existing Web page and expose it in your portal as a portlet. Consider alternatives if you want to change the way information is presented in the clipped portlet. That is, you don't need to control the UI or application flow, and you are accessing Web-based applications. For a greater level of control, use the OracleAS Portal OmniPortlet's Web page data source instead of Web Clipping.

Here are some examples of when you may consider using the Web Clipping portlet:

- **Stock chart portlet.** Suppose you want to create a portlet that displays the stock market's daily performance chart from your financial advisor's Web site. You could clip this information from an external Web site, even if your company is using a proxy.
- **Personalized weather portlet.** Suppose you want to create a portlet that displays weather information from a major Internet weather site, and you want your users to be able to personalize the portlet by providing the desired zip code.
- **Web mail portlet.** Suppose your users want to access their confidential Web mail accounts via a portlet and their inboxes to display in the portlet.

For more information on using Web Clipping, refer to [Chapter 5, "Creating Content-Based Portlets with Web Clipping"](#).

Note: To use OmniPortlet, the Simple Parameter Form, or the Web Clipping portlet, you must use Netscape 7.0 or higher, or Microsoft Internet Explorer 5.5 or higher for Windows 2000.

1.4.4 OmniPortlet

Figure 1–8 An OmniPortlet Using Tabular Format



employee_id	Name	Gender	Job	Email
20	Kathleen Bayyat	F	President - Manufacturing	kbayyat@oracle.com
30	Robert Rodriguz	M	President - Sales	rrodrigu@oracle.com
40	Edward Shields	M	Chief Financial Officer	eshields@oracle.com
110	Jan Francois Stewart	M	Graphic Artist	jfrancoi@oracle.com
100	Lisa Williams	F	Graphic Artist	lwilliam@oracle.com
430	Sandra Kyte	F	Course Developer	skyte@oracle.com
770	Eaulo Yau	F	Customer Sales Representative	eyau@oracle.com

What Is It?

The OracleAS Portal OmniPortlet is a declarative portlet-building tool that enables you to build portlets against a variety of data sources, including XML files, character-separated value files (for example, spreadsheets), Web Services, databases, Web pages, and SAP data sources. OmniPortlet users can also choose a pre-built layout for the data. Pre-built layouts include tabular, news, bullet, form, or chart.

Note: The SAP data source is not included with OracleAS Portal.

To learn more about using the SAP data source, visit the Oracle Portal Integration Solutions page on OTN

(<http://www.oracle.com/technology/products/ias/portal/point.html>).

Like Web Clipping, OmniPortlet supports proxy authentication, including support for global proxy authentication and per-user authentication. You can specify whether all users will automatically log in using a user name and password you provide, each user will log in using an individual user name and password, or all users will log in using a specified user name and password.

You'll find information about OmniPortlet on Portal Center (<http://portalcenter.oracle.com>), then click **Portlet Development**.

Who Is the Intended User?

OmniPortlet is best suited for use by page designers and developers.

When Should It Be Used?

Use OmniPortlet when you want to build portlets rapidly against a variety of data sources with a variety of layouts. Consider alternatives when you want complete control of the design and functionality of the portlet.

Here are some examples of when you may consider using OmniPortlet:

- RSS news feed portlet. Suppose you want to create a portlet that displays live, scrolling news information to your users. The data comes from a Really Simple Syndication news feed, such as the Oracle Technology Network Headlines. You also want the portlet to contain hyperlinks to the news source.
- Sales chart portlet. Suppose you want to present up-to-date information on your company's sales results. You also want to display data in the form of a pie chart, and your company stores its sales information in a remote relational database.
- SAP portlet. Suppose you want to display information from a company's SAP system. To minimize the load on the company's SAP Business Suite, the

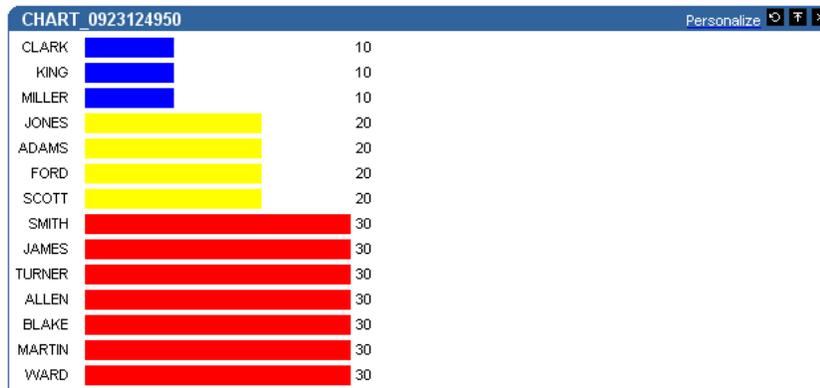


information retrieved from the system must be cached on a per user basis for the entire day.

For more information on OmniPortlet, refer to [Chapter 3, "Creating Portlets with OmniPortlet"](#) and [Chapter 4, "Building Example Portlets with OmniPortlet"](#)

1.4.5 Portlet Builder

Figure 1–9 Sample Chart from the Portlet Builder



What Is It?

OracleAS Portal includes a number of portlet-building wizards that are accessible through the Provider tab in the Portal Navigator. These wizards can be used to build charts, reports, forms, calendars, and lists of values.

When Should It Be Used?

It is recommended that you use [OmniPortlet](#) as an alternative to Portlet Builder whenever possible. OmniPortlet provides more flexibility and a separation of data and layout which enables you to change from a report to chart without re-creating the entire portlet (as is required with Portlet Builder). OmniPortlet also provides more options for deployment to many different portals simultaneously. OracleAS Portal will continue to support Portlet Builder as a portlet building option. However, new features and enhancements will be directed toward the OmniPortlet tool.

For more information on Portlet Builder, refer to [Appendix A, "Creating Portlets with the Portlet Builder"](#).

1.4.6 Programmatic Portlets

What Are They?

The OracleAS PDK contains a set of portlet-building APIs that you can use to create programmatic portlets.



You'll find more information about these APIs on Portal Center (<http://portalcenter.oracle.com>). Also, the PDK-PL/SQL is not described in detail in this manual. For specific information on the PDK-PL/SQL, refer to the Developer Services area on Portal Center (<http://portalcenter.oracle.com>).

Who Is the Intended User?

These tools are best used by experienced and knowledgeable IT developers.

When Should They Be Used?

Use the PDK when you have very specialized business rules or logic or when you require personalized authentication, granular processing of dynamic results, and complete user interface control. Additionally, use the PDK when:

- You're building a portlet from the start and need complete control over all of its functionality.
- You know Java or PL/SQL.
- You are comfortable with the PDK and the configuration of OracleAS Portal Providers.

Consider using this approach when the out-of-the-box declarative tools do not address your needs.

Here are some examples of when you may consider using Java portlets created with the Oracle Application Server Portal Developer Kit:

- Discussion forum portlet. Suppose you want to create a portlet that integrates your company's JSP-based discussion forum application with OracleAS Portal. The discussion forum posts are stored in a relational database. The portlet must also follow the strict look and feel of your company's Internet Web site.
- Email portlet. Suppose you want to create a portlet that enables users to send email from the company's intranet portal. You must integrate the email portlet with the company's LDAP server so that the users can use the address book on the LDAP server.

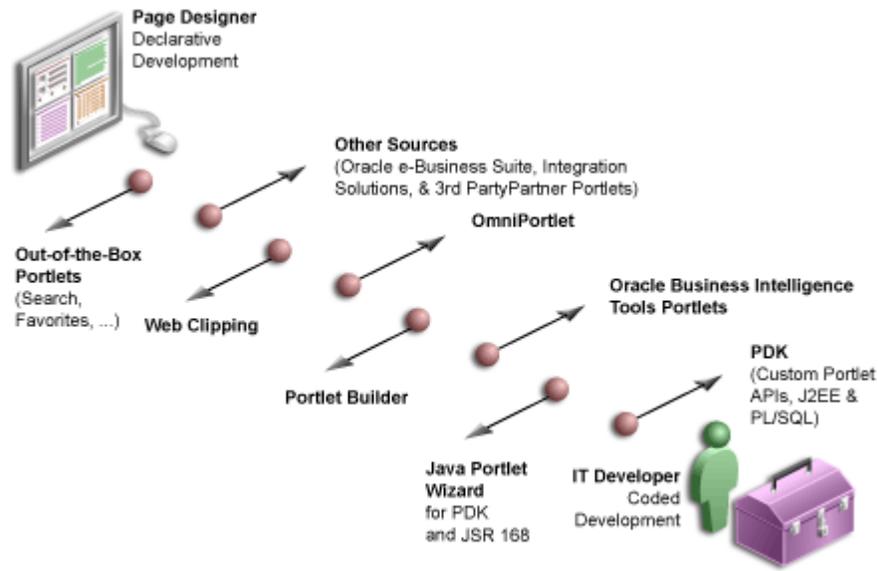
For more information on using the PDK-Java and PDK-PL/SQL, refer to [Chapter 6, "Creating Java Portlets"](#), [Chapter 7, "Enhancing Java Portlets"](#), and [Chapter 8, "Creating PL/SQL Portlets"](#).

1.4.7 Deciding Which Tool to Use

[Figure 1–10](#) illustrates the spectrum of portlet resources described in the previous section. Notice how one end of the spectrum is geared towards a page designer while the other end speaks to the portlet developer. You can choose your tool depending on which type of user most closely approximates your expertise.

For more information on deciding which tool to use, refer to [Chapter 2, "Portlet Technologies Matrix"](#).

Figure 1–10 Portlet Resources from Page Designers to Experienced Developers



1.5 Summary

In this chapter, you learned what portlets are, as well as the various technologies available in OracleAS Portal. For more information on these tools and technologies, refer to [Chapter 2, "Portlet Technologies Matrix"](#).

Portlet Technologies Matrix

This chapter describes portlet features, characteristics, technologies, and tools to help you decide which portlet building technology best suits your needs. It includes the following sections:

- [The Portlet Technologies Matrix](#)
- [General Suitability](#)
- [Expertise Required](#)
- [Deployment Type](#)
- [Caching Style](#)
- [Development Tool](#)
- [Portlet Creation Style](#)
- [User Interface Flexibility](#)
- [Ability to Capture Content from Web Sites](#)
- [Ability to Render Content Inline](#)
- [Charting Capability](#)
- [Public Portlet Parameters Support](#)
- [Private Portlet Parameter Support](#)
- [Event Support](#)
- [Ability to Hide and Show Portlets Based on User Privileges](#)
- [Multilingual Support](#)
- [Pagination Support](#)
- [Single Sign-On and External Application Integration](#)

2.1 The Portlet Technologies Matrix

Table 2–1, "Portlet Building Technologies Comparison Matrix" summarizes the technologies and tools you can use with OracleAS Portal on one axis, and the features and characteristics on the other. The matrix describes those tools and technologies that are covered in further detail in this guide: OmniPortlet, Web Clipping, the Java Portlets (PDK-Java) including Standards, Portlet Builder as an appendix, and PL/SQL Portlets (PDK-PL/SQL) (in the matrix only).

Note: While these are the primary tools for building portlets, additional tools and technologies exist, such as other Oracle products, including Oracle Reports (<http://www.oracle.com/technology/products/reports/index.html>) and Oracle Discoverer (<http://www.oracle.com/technology/products/discoverer/index.html>). These other tools are not covered in this guide.

The other sections in this chapter provide further detail on the characteristics listed in Table 2-1. Use the table to quickly scan all the features and characteristics, then refer to the subsequent sections for more in-depth information. You can also find more information on Portal Center (<http://portalcenter.oracle.com>).

Table 2-1 Portlet Building Technologies Comparison Matrix

Web Clipping	OmniPortlet	PDK-Java	Standards	Portlet Builder	PDK-PL/SQL
General Suitability					
A simple wizard-based tool that helps you retrieve and present Web content, originating from other Web sites, in your portal.	Wizard-based tool, accessible from the browser. Capable of retrieving and presenting data from a wide variety of data sources.	APIs for portlets built specifically for OracleAS Portal.	Portlets that should work with portals of other vendors. Oracle supports both WSRP and JSR-168.	Wizard-based tool, accessible from the browser. Best suited for simple, DB-centric applications or portlets.	APIs for portlets built specifically for OracleAS Portal.
Expertise Required					
No expertise required.	Basic understanding of one or more supported data sources and the concepts of portlet and page parameters and events.	Java servlet, JSP knowledge.	Java servlet, JSP knowledge.	Basic understanding of relational DB concepts. Optionally SQL, PL/SQL.	SQL, PL/SQL, PL/SQL Web Toolkit.
Supported Data Sources (for details, see Section 2.3, "Expertise Required")					
Any Web site accessible on the network over HTTP or HTTPS.	CSV, XML, Web Service, SAP, SQL, Web site, JCA.	No limitations.	No limitations.	SQL (local DB or remote DB via DB link)	SQL (local DB or remote DB via DB link)
Deployment Type					
Web provider	Web provider	Web provider	WSRP	Database provider	Database provider
Caching Style					
Expiry-based caching, invalidation-based caching (auto invalidate when personalized).	Expiry- and invalidation-based caching (auto invalidate when personalized).	Expiry-, validation-, and invalidation-based caching, ESI.	Validation- and expiry-based caching.	Expiry-based caching.	Expiry- and invalidation-based caching.
Development Tool					
Browser - wizard.	Browser - wizard.	Oracle JDeveloper - Java Portlet Wizard (or any other Java development environment - without the Wizard).	Oracle JDeveloper - Java Portlet Wizard (or any other Java development environment - without the Wizard).	Browser - optionally PL/SQL development environment.	PL/SQL development environment.
Portlet Creation Style					

Table 2–1 (Cont.) Portlet Building Technologies Comparison Matrix

Web Clipping	OmniPortlet	PDK-Java	Standards	Portlet Builder	PDK-PL/SQL
Develop in place.	Develop in place.	No in-place portlet building experience. Add portlet to page, edit defaults, and personalize.	No in-place portlet building experience. Add portlet to page, edit defaults, and personalize.	Develop first, then add portlet to page and develop in place.	No in-place portlet building experience. Add portlet to page, edit defaults, and personalize.
User Interface Flexibility					
N/A	Flexible.	Very flexible.	Very flexible.	Limited.	Very flexible.
Ability to Capture Content from Web Sites					
Yes, by its nature.	Yes, by using the Web Page Data Source.	Yes, by using the java.net package.	Yes, by using the java.net package.	No	Yes, by using the UTIL_HTTP package.
Ability to Render Content Inline					
Yes	No URL rewriting support, but can be achieved by using public portlet parameters and events.	By using private portlet parameters.	Include servlets and JSPs (using the PortletContext.getRequestDispatcher() method).	Pagination in reports and charts is rendered inline.	By using private portlet parameters.
Charting Capability					
N/A	Yes, 2D-3D charts.	By using BI Beans.	By using BI Beans.	HTML charts.	Programmatically, HTML charts.
Public Portlet Parameters Support					
Yes	Yes	Yes	No	Yes	Yes
Private Portlet Parameter Support					
N/A	N/A	Yes	Yes	No	Yes
Event Support					
Yes	Yes	Yes	Portlet private events (actions).	No	No
Ability to Hide and Show Portlets Based on User Privileges					
No, though it is possible to apply security managers that are not exposed through the UI.	No, though it is possible to apply security managers that are not exposed through the UI.	Yes, by using the security managers.	Yes, the Servlet security model is supported by using methods such as PortletRequest.isUserInRole() and PortletRequest.getUserPrincipal().	Yes	Yes, by using the Security APIs.
Multilingual Support					
N/A	Yes	Yes	Yes	No	Yes
Pagination Support					
N/A	No	Programmatically	Programmatically	Yes	Programmatically
Single Sign-On and External Application Integration					
SSO support through external application integration.	Basic authentication support if the data source requires it.	External application integration supported. LDAP integration is supported when the portlet is running behind the same firewall as the LDAP server.	No. (Feasible through custom user attributes.) LDAP integration is supported.	No. (It runs in the OracleAS Portal repository; it does not require SSO integration.)	SSO is enabled by using mod_oso.

2.2 General Suitability

This section describes each portlet-building technology in terms of its usage characteristics (for example, wizard-based or programmatic).

2.2.1 Web Clipping

Web Clipping is a simple wizard-based tool that helps you retrieve and present Web content, originating from other Web sites, in your portal. Web Clipping does not require you to have any technical background.

2.2.1.1 Examples of portlets you can build using Web Clipping

- Stock chart portlet
- Personalized weather portlet
- Web mail portlet

2.2.2 OmniPortlet

If you are looking for an easy-to-use, wizard-based tool to present information from a wide variety of data sources, you should consider OmniPortlet. OmniPortlet runs completely in the browser. All you need to do is drop your OmniPortlet on a portal page, and select your data source from a list of available data sources, which includes:

- Spreadsheet
- SQL
- XML
- Web Service
- Web page

Although OmniPortlet does not require you to use an additional development tool or have a strong technical background, you can build reusable and high-performing portlets with it.

2.2.2.1 Examples of portlets you can create with OmniPortlet

- RSS news feed portlet
- Sales chart portlet
- SAP Business Suite portlet

2.2.3 Java Portlets

If the wizard-based portlet building tools do not satisfy your needs, you can build your portlets programmatically using Java. The Java Community Process standardized the Java portlet APIs in 2003. Portlets built against the Java Specification Request (JSR) 168 standard are interoperable across different portal platforms. The Java Portlet Wizard, an Oracle JDeveloper plug-in, helps you get started with your Java portlets.

Note: When building portlets in Java, you have full control over your portlet's functionality. For example, you can control what it looks like and how it behaves.

2.2.3.1 Examples of portlets you can build using Java

- Discussion forum portlet
- Email portlet

2.2.4 Portlet Builder

Portlet Builder is a wizard-based tool to create data-driven portlets, where the data resides in an Oracle database. You can build interactive forms to insert, update, and delete database records. You can create flexible reports and HTML bar charts to display information from the database. Portlet Builder also enables you to pass parameters and navigate between your data-driven portlets by using dynamic links.

2.2.4.1 Examples of portlets you can build using the Portlet Builder

- Data entry portlet
- Dynamic list of partners portlet
- Sales results portlet

2.2.5 PL/SQL Portlets

Similar to Java portlets, PL/SQL portlets provide a flexible approach to build Web applications that cannot be satisfied by built-in portlets. For example, your application may require implementation of special business rules or logic or meet custom-designed authorization requirements. PL/SQL portlets are commonly used when you need to perform data intensive operations by using SQL and PL/SQL. OracleAS Portal offers a rich set of PL/SQL APIs, such as programmatic provider registration, object level privilege management, user interface control, or multilingual support.

For example, any information provider can create custom portlets to display an application to users through OracleAS Portal. Developers simply build their portlets according to OracleAS Portal Developer Kit (PDK) specifications and register the provider with OracleAS Portal. Developers can use the OracleAS PDK to develop portlets to suit their needs.

2.2.5.1 Examples of portlets you can build using PL/SQL

- Content upload portlet
- Site map portlet
- Sophisticated data entry and report portlet

2.3 Expertise Required

While some of the portlet building tools do not require portlet development skills, others assume a strong technical background. This section describes each tool in terms of the level of knowledge required to use it effectively.

2.3.1 Web Clipping

Web Clipping is a tool that does not require any technical background at all. However, if you want to parameterize the Web page content that you clipped, you need to have an understanding of public portlet parameters and page parameters.

2.3.2 OmniPortlet

OmniPortlet requires you to have basic knowledge of the data source you want to leverage in your portlet.

Data source	What you need to know about the data source
Spreadsheet	The URL that points to the spreadsheet containing the data that you want to display in the portlet.
SQL	The connection information to the data source and the SQL query that retrieves the data from the database.
XML	The location of the XML source and optionally the address of the XSL filter and the XML schema.
Web service	The WSDL URL, the method of the Web service, and optionally the XSL filter URL and the XML schema URL.
Web page	The Web page data source uses the same environment as Web Clipping. No technical background is required.
J2EE Connector Architecture	Although not displayed on the Type page of the OmniPortlet Wizard, a J2EEtm Connector Architecture (JCA) 1.0 adapter is also available. JCA provides a mechanism to store and retrieve enterprise data such as that held in ERP systems (Oracle Financials, SAP, PeopleSoft, and so on).

2.3.3 Java Portlets

To build Java portlets, you must know at least a subset of J2EE. Knowing HTML, Java servlets, and XML is a must, and JSP experience is recommended. Additional Java knowledge is optional, depending on the task you want to perform. Using Java portlets you can access any data source (supported by the Java language).

2.3.4 Portlet Builder

If you want to use Portlet Builder, you must have a good understanding of relational database concepts. Depending on what you want to achieve, SQL and/or PL/SQL knowledge may be required, as well. Using Portlet Builder, you can consume data from the local (Oracle Application Server infrastructure) database or remote databases using database links.

2.3.5 PL/SQL Portlets

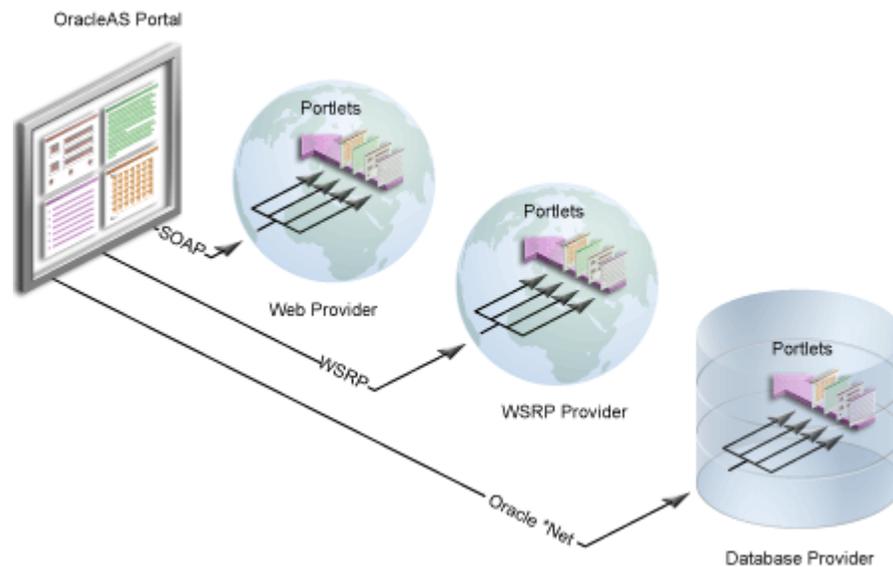
To build PL/SQL portlets, you must know how to write SQL statements, code and debug PL/SQL program units using SQL*Plus or similar development tool that enables you to connect to Oracle database. You should also know HTML and PL/SQL Web Toolkit to generate the portlet content. Experience of coding the PL/SQL Server Pages (PSP) is optional.

2.4 Deployment Type

As shown in [Figure 2-1](#), portlets can be deployed to OracleAS Portal through three provider types: Web providers, WSRP producers, and database providers. Web providers are deployed to a J2EE application server, which is often remote and communicates with OracleAS Portal through Simple Object Access Protocol (SOAP) over HTTP. Web Services for Remote Portlets (WSRP) is an OASIS standard that can be used to communication between portlets and OracleAS Portal. Database providers

are implemented in PL/SQL and deployed in the Oracle database where OracleAS Portal is installed.

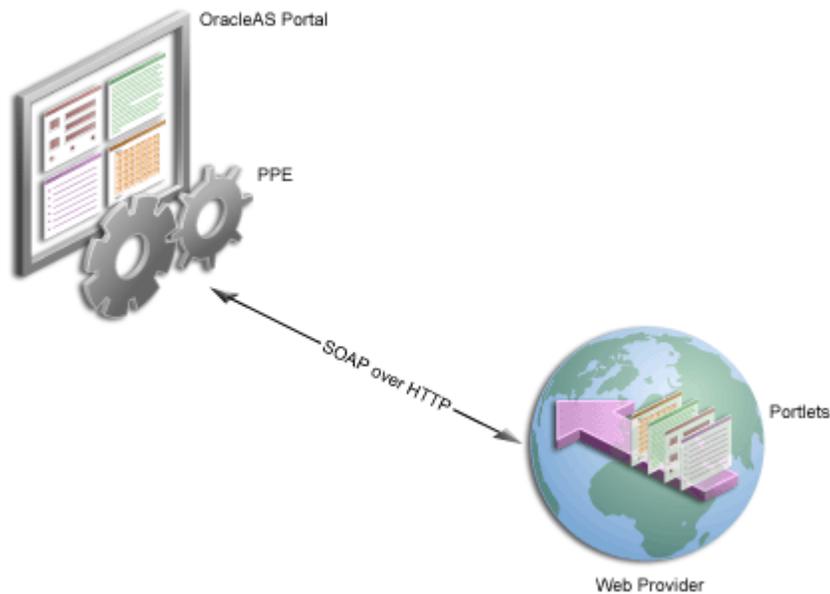
Figure 2-1 Portlet Provider Overview



2.4.1 Web Providers

Web providers are the most commonly used and flexible type of provider. They may reside on the same application server as OracleAS Portal, on a remote application server, or anywhere on the network. A Web provider could be implemented using virtually any Web technology. However, the Oracle Application Server Portal Developer Kit provides a Java framework that simplifies the task of building Web providers.

Web providers use open standards, such as XML, SOAP, HTTP, or J2EE for deployment, definition, and communication with OracleAS Portal. Also, because Web providers can be deployed to a J2EE container, they do not put an additional load on the OracleAS Portal Repository database.

Figure 2–2 Web Providers

There are several benefits when developing portlets and exposing them as Web providers. you can:

- Deploy portlets remotely.
- Leverage existing Web application code to create portlets.
- Specify providers declaratively.
- Take advantage of more functionality than that with database providers.
- Use standard Java technologies (for example, servlets and JSPs) to develop portlets of Web providers.

To expose your portlets using a Web provider, you must create a provider that manages your portlets and can communicate with OracleAS Portal using SOAP. To learn how to expose your portlets using a Web provider, refer to [Section 6.4, "Building JPS-Compliant Portlets with Oracle JDeveloper"](#).

2.4.2 WSRP Producers

Web Services for Remote Portlets (WSRP). Web services standard that enables the plug-and-play of visual, user-facing Web services with portals or other intermediary Web applications. Being a standard, WSRP enables interoperability between a standards-enabled container based on a particular language (such as JSR 168, .NET, Perl) and any WSRP portal. So, a portlet (regardless of language) deployed to a WSRP-enabled container can be rendered on any portal that supports this standard. From an architecture perspective, WSRP producers are very similar to Web providers. For more information on the WSRP portal architecture, see [Section 6.2.1, "The Relationship Between WSRP and JPS"](#).

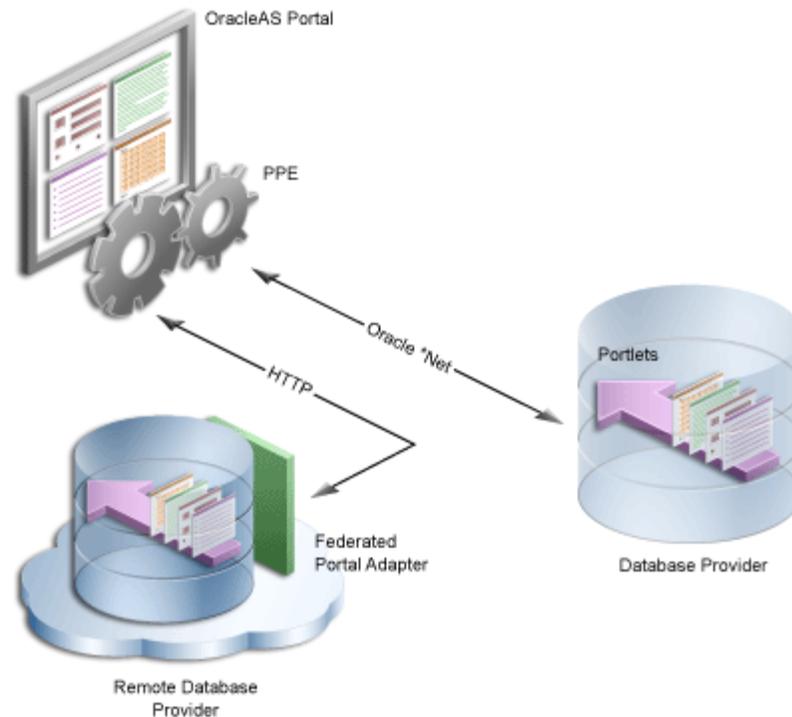
To expose your portlets as a WSRP producer, you must create a producer that manages your portlets. To learn more about WSRP, see the WSRP and JSR 168 Standards page on the Oracle Technology Network. To learn how to expose your portlets as a WSRP producer, see [Section 6.4.2.3, "Deploying Your Portlet to an Application Server"](#). You can also test your WSRP producers online using the OracleAS Portal Verification Service (<http://portalstandards.oracle.com>

2.4.3 Database Providers

You can also create a database provider that owns one or more PL/SQL portlets. Database providers and their PL/SQL portlets reside in the Oracle Application Server Metadata Repository database and are implemented as PL/SQL packages. To access database providers on remote servers, you can use the Federated Portal Adapter. For more information, see the "Understanding the Federated Portal Adapter" article on Portal Center

(http://www.oracle.com/technology/products/ias/portal/portlet_development_10gr2.html).

Figure 2–3 Database Providers



Database providers are ideal when you need to perform data-intensive operations using PL/SQL. An example of this is when you are building forms or charts with the OracleAS Portal user interface or the PL/SQL APIs provided in the PDK.

To learn how to expose your PL/SQL portlets using a database provider, refer to [Section 8.13, "Registering Providers Programmatically"](#).

2.4.4 Provider Architecture

Figure 2–4 Provider Architecture

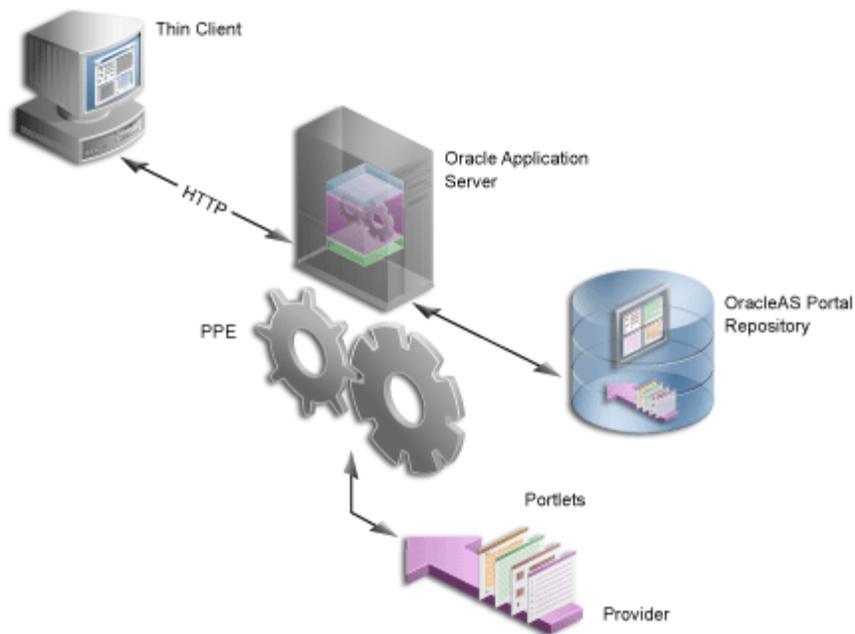


Figure 2–4 illustrates the basic architecture of portlet providers. When users display the portal page in their Web browsers, the flow of the request works like this:

1. The user requests a portal page from the Web browser by entering a URL in the browser's address field.
2. The Parallel Page Engine (PPE), which resides in the Oracle Application Server's middle tier, retrieves the portal page layout, portlet, and provider information (also called the page metadata) from the OracleAS Portal Repository.

Note: The PPE is responsible for constructing the requested portal page based on the page metadata.

3. The PPE contacts all the providers for the portlet content.
4. The providers make the necessary calls to their portlets so that the portlets generate the portlet content in the form of HTML or XML code.
5. The providers return the portlet content back to the PPE.
6. The PPE assembles the portal page, and the Oracle Application Server returns the page to the Web browser.

Note: For more information about the portlet and provider architecture, visit the Portlet Development page on Portal Center (<http://portalcenter.oracle.com>).

Web Clipping, OmniPortlet, and Java portlets communicate with OracleAS Portal through Web providers. After you install OracleAS Portal, Web Clipping and

OmniPortlet are ready to use; their providers are registered with OracleAS Portal out of the box. You have to register the provider of your Java portlets explicitly.

Note: Web Clipping and OmniPortlet are developing very rapidly. The most recent versions of these portlets are available for download on OTN. If you decide to go with the downloaded version of these tools, you must deploy them to OC4J and register them with OracleAS Portal as Web providers. For more information, refer to the *Oracle Application Server Portal Configuration Guide* available on the Documentation on OTN (<http://www.oracle.com/technology/products/ias/portal/documentation.html>).

Data-driven portlets, built with Portlet Builder, communicate with OracleAS Portal through database providers. You do not need to register the Portlet Builder providers with OracleAS Portal explicitly; they are automatically registered for you.

PL/SQL portlets communicate with OracleAS Portal through a database provider. You have to register the database provider explicitly.

2.4.5 Provider Registration

OracleAS Portal includes a provider registration wizard, accessible from the Providers tab in the Navigator. The registration screen contains the following sections:

- **Provider Information:** Contains the provider name, time-out details, and the implementation style.
- **User/Session Information:** Contains information on how session information is communicated to the providers.
- **Database Providers:** Contains information specific to database providers, such as the implementation owner and name.
- **Web Providers:** Contains information specific to Web providers, such as the URL of the provider, the user's identity communicated to the provider, and proxy information.
- **WSRP Producers:** Contains information specific to WSRP producers, such as the WSDL URL and the session handling information supplied by the producer.

The sections that impact session handling are the User/Session Information section and the cookie domain check box on the Web provider registration page of the wizard. For more information on using the same cookie domain, refer to the "Sharing Session Cookies Not Allowed in PDK-Java Release 2" article, which can be accessed from the Portlet Development page on Portal Center

(http://www.oracle.com/technology/products/ias/portal/portlet_development_10gr2.html).

2.4.5.1 User/Session Information

In the User/Session Information section, you can choose one of two options, depending on the session-related information you want the providers to receive from OracleAS Portal:

- **Public:** Choosing this option sets the name of the user to Public. The providers will not receive any session-related information like the session ID or the time the user logged in. This option is the equivalent of the LOGIN_FREQUENCY_PUBLIC

in the provider registration API (see [Section 8.13, "Registering Providers Programmatically"](#)).

- **User:** Choosing this option sends the name of the OracleAS Portal user to the providers. This section contains two options:
 - **Login Frequency:** Here, you can select one of three options (always, once per user session, and never) to determine how often the session information must be sent to the provider, and thus how often the user needs to log in.
 - **Require Portal user-specific session information:** Here, you can specify whether the session information will be sent in the provider calls.

2.5 Caching Style

Caching plays an essential role in ensuring that your portal is highly performant. OracleAS Portal supports caching on various levels, such as caching pages, portlets, styles, and page metadata. Caching portlets is key to delivering accurate information in a timely manner to your users. All portlet building technologies, available with OracleAS Portal, support caching.

As OracleAS Portal supports user personalization of pages and portlets, the view of a page can vary from user to user. OracleAS Portal's caching is designed to allow content to vary on a per-user basis. Therefore, portal objects, including portlets, can be cached at two levels: user level and system level.

- User-level caching is for a specific user; the cache entries stored are unique for that user and cannot be accessed by other users. Good candidates for user-level caching are portlets supporting personalization, such as e-mail or stock ticker portlets.
- System-level caching enables users to share a single cache entry and, therefore, there is no need to cache a copy of the object for every user. Examples of content that might be suitable for system-level caching are news portlets that are not personalizable, or custom-built navigation portlets.

When not using caching, you may find accessing various data sources with Web Clipping, OmniPortlet, and Portlet Builder to be time consuming. When you enable caching, you instruct OracleAS Portal or OracleAS Web Cache to maintain a copy of the portlet content. If the portlet is requested and the content was cached previously, the portlet does not have to spend time contacting the data source and regenerating its content again. Simply, the previously cached portlet content is returned.

- **Expiry-based caching:** You can use expiry-based caching when the portlet content is static or when it is not critical that the most up-to-date content be displayed. When using expiry-based caching, you must specify the caching period.
- **Validation-based caching:** You can use validation-based caching for portlets with dynamic content that changes frequently or unpredictably. The portlet associates its content with a caching key and returns the key value along with the content. When the portlet content is requested, the portlet decides, based on the caching key, if the current content is valid. If the portlet content is valid, then it returns a response indicating that the cached content can be used (that is, the content is valid) or generates the new portlet content and returns it along with a new caching key for that content.
- **Invalidation-based caching:** Invalidation-based caching is the most complex, but also the most flexible, form of caching. It combines the efficiency of expiry-based caching with the ability to invalidate the cache content any time. Objects in OracleAS Web Cache are considered valid until they are invalidated explicitly.

2.5.1 Web Clipping, OmniPortlet, and Portlet Builder

For portlets built with Web Clipping, OmniPortlet, and Portlet Builder you can specify a period of time for which they are cached (expiry-based caching). In addition to this, portlets built with Web Clipping and OmniPortlet are refreshed automatically when the end user personalizes them.

2.5.2 Java Portlets

Java portlets support three types of caching: expiry-, validation-, and invalidation-based caching. With Java portlets, you can combine invalidation-based caching with either expiry-based or validation-based caching.

In addition to caching all your portlet's content, you can also cache fragments of your portlets by using Edge Side Includes (ESI).

2.5.3 PL/SQL Portlets

Similar to Java portlets, PL/SQL portlets also support three types of caching: expiry-, validation-, and invalidation-based caching.

2.6 Development Tool

This section describes the type of development tool you may use to build the portlet. For example, OmniPortlet is built in a browser-based wizard while Java portlets may be built in a tool like Oracle JDeveloper.

2.6.1 Web Clipping, OmniPortlet, and Portlet Builder

OmniPortlet, Web Clipping, and Portlet Builder use a browser-based wizard as the development tool.

2.6.2 Java Portlets

To build Java portlets, the only requirement is the PDK-Java. It is highly recommended, though, that you use Oracle JDeveloper, a professional, integrated development environment (IDE). While you can consider other IDEs, the PDK contains an Oracle JDeveloper plug-in that includes the Java Portlet Wizard, to minimize your Java portlet development efforts.

The Java Portlet Wizard generates a starting skeleton and file structure for both JSR 168 and PDK-Java portlets. You need to add only your own business logic to the skeleton. JDeveloper can also package and deploy your applications to your J2EE container, such as OracleAS Containers for J2EE (OC4J). Also, Oracle JDeveloper helps you test your portlet provider. You can use the integrated stand-alone OC4J that is shipped with Oracle JDeveloper as your development Java portlet runtime environment, if the version matches that of the platform on which you plan to deploy.

2.6.3 PL/SQL Portlets

When developing a PL/SQL portlet, you create PL/SQL program units that access OracleAS Portal by calling OracleAS Portal PL/SQL APIs. To enable this access, you create a schema, the provider schema, to store the provider and portlet PL/SQL packages in the same database in which OracleAS Portal is installed. The provider schema must be granted execute privileges on the OracleAS Portal PL/SQL APIs.

To facilitate the development of database providers and PL/SQL portlets, you can use the PL/SQL Generator, a hosted utility that creates installable PL/SQL code for a database provider and its PL/SQL portlets. The PL/SQL Generator is a Web application that receives the provider and portlet definitions in the form of an XML file. The syntax of the XML tags that are used for the provider and portlet definition is a subset of the XML tags that are used for defining Web providers with the PDK-Java. The output of the PL/SQL Generator is a SQL script that can be run from SQL*Plus. The script contains SQL commands for installing the provider and portlet packages.

The hosted PL/SQL Generator is available on the Oracle Application Server Portal Developer Kit page of OTN (<http://www.oracle.com/technology/products/ias/portal/pdk.html>).

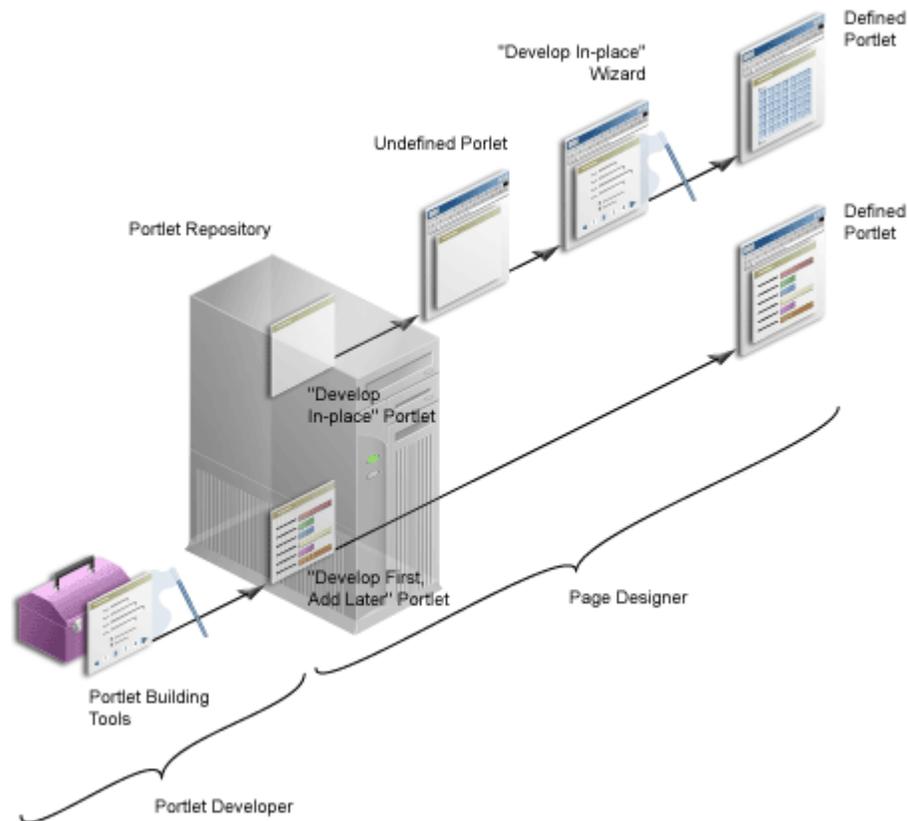
2.7 Portlet Creation Style

OracleAS Portal supports two types of portlet creation as shown in the following figure:

- "Develop in-place"
- "Develop first, add later"

The figure also indicates that the "Develop first, add later" portlet creation is usually the task of the portlet developer, while the "Develop in-place" portlet creation is the page designer's responsibility.

Figure 2–5 Portlet Creation Style



2.7.1 OmniPortlet and Web Clipping

OmniPortlet and Web Clipping offer the same approach to creating portlets. First you add the portlets to a portal page and then you define them in place on the page.

2.7.2 Java Portlets

Java portlets do not tend to provide a develop-in-place experience. You can easily add edit defaults and personalization to your Java portlets.

Note: With extensive coding, you can create develop in place Java portlets. For example, Web Clipping and OmniPortlet are both Java portlets.

2.7.3 Portlet Builder

With Portlet Builder you define the portlets first. The previously defined portlets are then made available to you in the portlet repository so you can add them to your pages. For simple portlets, though, Portlet Builder offers you the develop in place experience, similar to OmniPortlet and Web Clipping.

Note: Portlets built with Portlet Builder's develop-in-place technology are somewhat limited as compared to those built using the Navigator.

2.7.4 PL/SQL Portlets

Similar to the Java portlets, PL/SQL portlets typically follow the "Develop first, add later" creation path. Extensive coding is required to develop-in-place PL/SQL portlets. For example, simple in-place portlets that are offered by Portlet Builder are written in PL/SQL.

2.8 User Interface Flexibility

This section describes the portlet building tools in terms of the control you have over the user interface.

2.8.1 Web Clipping

Because of its nature, Web Clipping always displays the remote Web site content, therefore UI flexibility is not a requirement for this portlet.

2.8.2 OmniPortlet

OmniPortlet enables you to use a number of different pre-built layouts, such as scrolling news, tabular, and chart. You can also use the built-in HTML layout to personalize the look and feel of your portlet, though there are some limitations to the flexibility of this layout.

2.8.3 Java Portlets and PL/SQL Portlets

In Java portlets and PL/SQL portlets, you have full control over your portlet's user interface. Your portlet is free to generate any HTML content that conforms the rendering rules for OracleAS Portal pages.

2.8.4 Portlet Builder

While you can be very productive in building portlets with Portlet Builder, it is somewhat limiting with respect to the user interface.

2.9 Ability to Capture Content from Web Sites

This section describes the portlet building tools in terms of their ability to include content from other sources.

2.9.1 Web Clipping

In the event that you have to create a portlet that displays the content from a remote Web site as it is presented at the source location, the best tool to use is Web Clipping. Web Clipping can tolerate the changes of the source HTML page to some extent. If a clipped table moves from one place to another in the source page, the Web Clipping engine can find the table again using the internal "fuzzy match" algorithm. Portlets built with Web Clipping can also maintain sessions to the remote Web sites. Web Clipping also supports the end user personalization of HTML form values.

2.9.2 OmniPortlet

Another possible scenario is that you are interested in the data only, not in the way it is presented on the remote Web site. You want to retrieve the data, process the data (format, filter, and so on), and present it in a portlet in a tabular, chart, or news format. For this purpose, OmniPortlet is the best choice. OmniPortlet is a powerful tool that extracts data from Web pages by using its Web data source.

2.9.3 Java Portlets

In your Java portlets, similarly to other Java applications, you can always take advantage of the low-level Java networking APIs to retrieve and process content from remote Web sites. To avoid unnecessary development efforts, before choosing Java always make sure that Web Clipping or OmniPortlet are not viable options for you.

2.9.4 PL/SQL Portlets

PL/SQL portlets can communicate with Web servers to access data on the Internet by using procedures and functions from the UTL_HTTP package. The package makes HTTP callouts from SQL and PL/SQL. The package also supports HTTP over the Secured Socket Layer protocol (SSL), also known as HTTPS, directly or through an HTTP proxy. Other Internet-related data-access protocols (such as the File Transfer Protocol (FTP) or the Gopher protocol) are also supported using an HTTP proxy server that supports those protocols.

2.10 Ability to Render Content Inline

Active elements in your portlets, such as links or form buttons, enable your users to navigate to remote URLs. In a News portlet, for example, you can click a hyperlink to navigate to a news site with detailed information about the news you are interested in. You leave the portal page; the News site replaces it in your browser.

However, you may be required to keep your users within the context of the portal page by rendering the requested content within the same portlet container. In the News portlet, for example, you have to display the detailed news on the portal page within the boundaries of the same portlet.

2.10.1 Web Clipping

Web Clipping has URL rewriting support to achieve this functionality: it can process the links, originating from the source Web site, and modify (rewrite) them to achieve the desired functionality.

You can choose from the following three options:

- You can select not to rewrite the URLs within the portlet, in which case clicking the links takes the users out of Portal to the Web site providing the clipping. If the Web Clipping provider is registered with an External Application, this may require that the user enter login information before navigating the Web site.
- If the Web Clipping provider is registered with an External Application and the clipping requires authentication, you can instruct Web Clipping to rewrite all URLs within the portlet to point to the Login Server. In this case, navigation will cause the user to leave OracleAS Portal, while also using the Login Server to log the browser into the External Application.
- You can select to rewrite all URLs within the portlet (inline rendering) to point back to the portal page so that all browsing within the Web Clipping portlet remains within OracleAS Portal. If the Web Clipping provider is registered with an External Application, this will cause the Web Clipping provider to log itself into the External Application. In this case, the navigation within Portal through the Web Clipping provider is authenticated in the External Application.

2.10.2 OmniPortlet

OmniPortlet does not offer URL rewriting directly, but you can achieve the inline rendering functionality by using public portlet parameters and events. Then you have to map the events to the same portal page where your OmniPortlet resides.

2.10.3 Java Portlets

Since you have full control over the links and buttons in Java portlets, you can easily implement the inline rendering functionality. You have to append the private portlet parameters to the page URL.

If you use Struts in your portlet, the PDK-Struts integration framework renders your content always in the same portlet container.

If your portlet consists of multiple JSPs (for example, several steps in a survey, or in a Wizard), your portlet can make use of a special parameter to specify at runtime the JSP to use to render the content.

2.10.4 Portlet Builder

Portlets built with Portlet Builder do not have inherent inline rendering support. You can, however, construct your links in SQL-based reports and charts so that they point to specific portal pages. If required, you can also pass parameters to portal pages, which in turn can be mapped to portlet parameters.

2.10.5 PL/SQL Portlets

Similar to Java portlets, you have full control over the active elements in PL/SQL portlets and, therefore, you can achieve the inline rendering functionality programmatically by implementing private portlet parameters.

2.11 Charting Capability

This section describes the portlet building tools in terms of their charting functionality.

2.11.1 Web Clipping

Because of its nature, Web Clipping can retrieve and present HTML content containing charts, but it does not support the creation of charts.

2.11.2 OmniPortlet

OmniPortlet supports the following three chart types: bar, line, and pie. Charts in OmniPortlet are dynamically generated images with, optionally, event-enabled hyperlinks.

2.11.3 Java Portlets

You can create more sophisticated chart portlets programmatically in your Java portlets using Oracle's Business Intelligence (BI) Beans.

Note: Oracle Reports and Oracle Discoverer portlets use BI Beans to create professional graphs.

2.11.4 Portlet Builder

With Portlet Builder, you can build HTML-based bar chart portlets. Among other features, you can specify the color and orientation of the bars.

2.11.5 PL/SQL Portlets

In PL/SQL portlets, HTML-based charting can be achieved by extensive coding.

2.12 Public Portlet Parameters Support

There are three types of parameters in OracleAS Portal: page parameters, public portlet parameters, and private portlet parameters.

- **Page parameters:** You can use a page parameter to pass a value to a page. Using page parameters, the information that is displayed on a page can vary depending on where the page is called from and who is viewing the page. Using page parameters, page designers can synchronize the portlets on a page by passing them the same values. This provides the ability to reuse and tailor portlets on pages by merely integrating them with page parameters. Without this functionality, you would have to code portlets individually to use different parameter values.
- **Public portlet parameters:** You can use a public portlet parameter to pass a value to a portlet. Using portlet parameters, the information that is displayed in a portlet can be specific to a particular page or a user. Portlet parameters are created by the portlet developer and are exposed to the page designer, through the user interface. After adding a portlet to a page, page designers can assign values to the public portlet parameters to make the information displayed in the portlet specific to the page.

Page designers can assign values to public portlet parameters by providing a specific value (constant), a system variable (for example, the portal user name), or

a page parameter. At run time, the portlet receives the values from the sources specified. In this way, page designers have complete control over the source of the parameter, whereas you have complete control over how the data is used after it is transmitted to the portlet.

- **Private portlet parameters:** You can use private portlet parameters to implement internal navigation in your portlet. You can pass parameters to your portlets every time the page is requested. Private portlet parameters can be passed exclusively from the portlet instance to the same portlet instance.

Portlets supporting public portlet parameters enable page designers to tailor the portlets' data input for each portlet instance. In this case, the portlet developer can focus on the portlet logic, while page designers can easily reuse portlets and address the interaction between the page and the portlets.

All five portlet building technologies discussed in this chapter (OmniPortlet, Web Clipping, Java portlets, Portlet Builder, and PL/SQL portlets) support public portlet parameters. OmniPortlet, Web Clipping, and Portlet Builder provide complete support through their wizard interface. You can add public portlet parameter support to your Java portlets programmatically or with the Java Portlet Wizard. PL/SQL portlets support public parameters only programmatically.

Note: The JSR 168 standard does not cover the notion of public portlet parameters. If you want to utilize public portlet parameters in your Java portlets, you have to use PDK-Java.

2.13 Private Portlet Parameter Support

This section describes the portlet building tools in terms of their support for private parameters.

2.13.1 OmniPortlet, Web Clipping, and Portlet Builder

OmniPortlet, Web Clipping, and Portlet Builder do not provide access to the portlet developer to private portlet parameters.

2.13.2 Java Portlets and PL/SQL Portlets

In your Java portlets and PL/SQL portlets, you can implement internal navigation by using private portlet parameters.

Note: PL/SQL portlets do not support private and public parameters simultaneously. You need to decide which parameter type to support before coding your PL/SQL portlet.

2.14 Event Support

An event is a user action that you define to display a Portal page. User actions include clicking a link or a button in a portlet. Page designers specify what to do when an event occurs in a portlet on a page. When an event occurs, page designers can either redisplay the current page or navigate the user to another portal page, optionally passing values to that page's parameters.

2.14.1 Web Clipping, OmniPortlet, and Java Portlets

Web Clipping, OmniPortlet, and Java portlets support events.

2.14.2 Portlet Builder and PL/SQL Portlets

Portlet Builder and PL/SQL portlets do not support events.

2.15 Ability to Hide and Show Portlets Based on User Privileges

This section describes the portlet building tools in terms of their support for authorization functionality.

2.15.1 Web Clipping and OmniPortlet

You can hide and show portlets built with Web Clipping and OmniPortlet on portal pages dynamically by using security managers. Although Web Clipping and OmniPortlet do not expose security managers through the user interface, you can apply them by editing their XML provider definition file.

2.15.2 Java Portlets

The PDK provides a number of security managers for Java portlets. For example:

- **Group security manager:** The group security manager makes the portlet appear to users who are members of a specified group, while hiding it from those who are not members.
- **Authentication level security manager:** You can use the authentication level security manager to control access to the portlets based on the user's authentication level. For example you may hide the portlet from public users but display it to authenticated users.

JSR 168 portlets support the standard servlet mechanisms.

2.15.3 Portlet Builder

Portlet Builder provides a declarative user interface to control access to portlets.

2.15.4 PL/SQL Portlets

The PDK provides the Security APIs to implement hiding and showing content in PL/SQL portlets.

2.16 Multilingual Support

This section describes the portlet building tools in terms of their support for other languages.

2.16.1 Web Clipping, OmniPortlet, Java Portlets, and PL/SQL Portlets

Web Clipping, OmniPortlet, Java portlets, and PL/SQL portlets display textual information in the language selected by the portal user.

2.16.2 Portlet Builder

Portlets built with Portlet Builder support English only.

2.17 Pagination Support

Support for pagination is useful when you are required to display a relatively large set of records in your portlets.

2.17.1 Web Clipping

Pagination support is not applicable to Web Clipping.

2.17.2 OmniPortlet

OmniPortlet does not support pagination.

2.17.3 Java Portlets and PL/SQL Portlets

You can implement pagination in your Java portlets and PL/SQL portlets programmatically.

2.17.4 Portlet Builder

Portlet Builder has built-in support for pagination.

2.18 Single Sign-On and External Application Integration

This section describes the portlet building tools in terms of authentication for external application.

2.18.1 Web Clipping

Web Clipping's integration with the external application framework provides a fully automated mechanism to store passwords to external Web sites. All you have to do is to associate an External Application ID to the Web Clipping provider when registering the provider.

2.18.2 OmniPortlet

OmniPortlet enables you to store connection information when the data source is password protected. The credentials to access the data source can either be shared across all users, or saved on a per user basis. OmniPortlet is capable of storing database credentials, as well as HTTP basic authentication user name-password pairs. The credentials are stored in the secured data repository of OmniPortlet, in an Oracle database.

2.18.3 Java Portlets

Java portlets can integrate with the external application framework as well as any LDAP server, such as Oracle Internet Directory, programmatically.

2.18.4 PL/SQL Portlets

You can build PL/SQL portlets that enable single sign-on by using `mod_osso`, an authentication module on the Oracle HTTP Server. `mod_osso` is a simple alternative to the single sign-on SDK, used in earlier releases to integrate partner applications. `mod_osso` simplifies the authentication process by serving as the sole partner application to the Single Sign-On server.

PL/SQL portlets can integrate with the external application framework programmatically.

2.19 Summary

In this chapter, you learned about the tools and technologies available in OracleAS Portal, the benefits of each, as well as the different methods of deploying portlets. For specific information on each of these tools and technologies, refer to the individual chapters in this manual:

- [Chapter 3, "Creating Portlets with OmniPortlet"](#)
- [Chapter 5, "Creating Content-Based Portlets with Web Clipping"](#)
- [Chapter 6, "Creating Java Portlets"](#)
- [Chapter 8, "Creating PL/SQL Portlets"](#)
- [Appendix A, "Creating Portlets with the Portlet Builder"](#)

Part II

Creating Portlets

Part II contains the following chapters:

- [Chapter 3, "Creating Portlets with OmniPortlet"](#)
- [Chapter 4, "Building Example Portlets with OmniPortlet"](#)
- [Chapter 5, "Creating Content-Based Portlets with Web Clipping"](#)
- [Chapter 6, "Creating Java Portlets"](#)
- [Chapter 7, "Enhancing Java Portlets"](#)
- [Chapter 8, "Creating PL/SQL Portlets"](#)

Creating Portlets with OmniPortlet

This chapter provides an overview of OmniPortlet and explains the user interface elements associated with OmniPortlet. This chapter contains the following sections:

- [What is OmniPortlet?](#)
- [The OmniPortlet Wizard](#)
- [Parameters and Events](#)

For information on using OmniPortlet to build example portlets, refer to [Chapter 4, "Building Example Portlets with OmniPortlet"](#). For troubleshooting information regarding OmniPortlet, refer to [Section B.3, "Diagnosing OmniPortlet Problems"](#). For information on registering and configuring OmniPortlet with Oracle Application Server Portal, refer to Appendix I, "Configuring the Portal Tools Providers" in the *Oracle Application Server Portal Configuration Guide*.

3.1 What is OmniPortlet?

OmniPortlet is a subcomponent of Oracle Application Server Portal that enables page designers and developers to easily publish data from various data sources using a variety of layouts. You can base an OmniPortlet on almost any kind of data source, such as a spreadsheet (character-separated values), XML, and even application data from an existing Web page.

Note: You can find more information about developing different types of portlets in [Chapter 1, "Understanding Portlets"](#), and information about providers and other portlet technologies in [Chapter 2, "Portlet Technologies Matrix"](#).

OmniPortlet enables page designers and content contributors to:

- Display data from multiple sources (CSV, XML, SQL, and so on)
- Sort the data to display
- Format data using a variety of layouts (bulleted list, chart, HTML, and so on)
- Use portlet parameters
- Raise portlet events
- Expose personalizable settings to page viewers

To display personalized data, you can refine the retrieved data by filtering the results returned from a data source, and parameterize the credential information used to

access secure data. Out of the box, OmniPortlet provides the most common layout for portlets: tabular, chart, HTML, news, bulleted list, and form.

Note: To use OmniPortlet, the Simple Parameter Form, or the Web Clipping portlet, you must use Netscape 7.0 or higher, or Microsoft Internet Explorer 5.5 or higher for Windows 2000.

OmniPortlet is provided with Oracle Application Server 10g; you can add an OmniPortlet from the OracleAS Portal Repository in the Portlet Builders folder. If you've downloaded OmniPortlet as part of the Oracle Application Server Portal Developer Kit, you must register it before you can use it. To learn more about registering a Web provider, refer to the *Oracle Application Server Portal Configuration Guide*, located on the OracleAS Portal Documentation page on OTN (<http://www.oracle.com/technology/products/ias/portal/documentation.html>). You can then add an OmniPortlet to any portal page.



You can find more information about building portal pages in the *Oracle Application Server Portal User's Guide* on the OracleAS Portal Documentation page on OTN. You can also upgrade to later releases of OmniPortlet from the Portlet Development page on OTN (<http://www.oracle.com/technology/products/ias/portal/>) as part of the Oracle Application Server Portal Developer Kit (PDK).

Instructions for installing, configuring, and registering the OmniPortlet provider are provided within the `pdksoftware.zip` file containing the PDK-Java and Portal Tools. For specific information on configuring OmniPortlet, refer to Appendix I, "Configuring the Portal Tools Providers" in the *Oracle Application Server Portal Configuration Guide*.

3.2 The OmniPortlet Wizard

The OmniPortlet Wizard initially contains six steps. When you first define your OmniPortlet, you set the data source type, data source options, filter options, view options, and layout. When you've completed these steps of the wizard, you can re-enter the wizard by clicking Edit Defaults for the portlet. When you re-enter the wizard, you can change the definitions on the Source, Filter, View, and Layout tabs, as well as set up the event parameters on the Events tab.

This section provides a high-level overview of the six tabs (see the following table). You can also find information in the online Help (accessible by clicking the Help link in the product), which describes the options on each tab.

Table 3-1 *OmniPortlet Wizard and Edit Defaults*

Step/Tab	Description
Type	Provides your data source options. Displays only in the initial definition of the portlet, and is not available when editing the defaults of the portlet.
Source	Provides the options for the selected data source, such as the URL of the Web Service you wish to use. You can change these options later when editing the defaults of the portlet.
Filter	Provides sorting options at the OracleAS Portal level to enable you to refine your results. You can change these options later when editing the defaults of the portlet.

Table 3–1 (Cont.) OmniPortlet Wizard and Edit Defaults

Step/Tab	Description
View	Provides options for displaying portlet header and footer text, the layout style, and caching. You can change these options later when editing the defaults of the portlet.
Layout	Provides detailed options for customizing the layout. You can change these options later when editing the defaults of the portlet.
Events	Does not display in the initial definition of the portlet. Provides options for adding events to the portlet. Displays only after the portlet has been defined in the Edit Defaults mode of the wizard.

3.2.1 Type

Figure 3–1 Type Tab of the OmniPortlet Wizard

- Spreadsheet - A text file with character separated values (CSV)
- SQL
- XML
- Web Service
- Web Page - Use existing web content as a source of data

Note: If you've downloaded and installed an additional data source, the data source will display on the Type tab.

When you first launch OmniPortlet, the Type step displays, which enables you to choose your data source. Out of the box, OmniPortlet supports the following data sources:

Table 3–2 Supported Data Source Types

Data Source Type	Description
Spreadsheet	Displays data from a text file containing character-separated values (CSV).
SQL	Displays data from a database using SQL.
XML	Displays data from an XML file.
Web Service	Displays data from a discrete business service that can be accessed over the Internet using standard protocols.
Web Page	Displays data based on existing Web content.

Table 3–2 (Cont.) Supported Data Source Types

Data Source Type	Description
J2EE Connector Architecture*	(Displays only if the Sample Provider is registered with OracleAS Portal). A J2EEtm Connector Architecture (JCA) 1.0 adapter is also available. JCA provides a mechanism to store and retrieve enterprise data such as that held in ERP systems (Oracle Financials, SAP, PeopleSoft, and so on).

After you complete the OmniPortlet Wizard and edit the defaults of the portlet, you cannot change the data source type.

3.2.2 Source

After you've chosen your data source type, the Source step of the OmniPortlet Wizard displays. This step adapts to the data source you've chosen, to enable you to specify the options offered by that data source. The Source tab contains a Proxy Authentication section if the OmniPortlet provider has been configured to use a proxy server requiring authentication, and a Connection section where you can provide the necessary information for connecting to the data source.

This section contains information about the two common areas on the Source tab:

- [Proxy Authentication](#)
- [Connection Information](#)

Later, this section also describes the portion of the Source tab specific to each data source.

- [Spreadsheet](#)
- [SQL](#)
- [XML](#)
- [Web Service](#)
- [Web Page](#)

Note: For more information on the Source tab options, click Help in the upper right corner of the page.

3.2.2.1 Proxy Authentication

OmniPortlet supports proxy authentication, including support for global proxy authentication and per-user authentication. You can specify whether all users will automatically log in using a user name and password you provide, each user will log in using an individual user name and password, or all users will log in using a specified user name and password. If the OmniPortlet provider has been set up to use proxy authentication that requires your login, a Proxy Authentication section displays on the Source tab where you can enter this information.

The Proxy Authentication section only displays for the data sources that may require you to use a proxy server to access them: CSV (character-separated values), XML, Web Service, and Web Page. For more information on configuring the OmniPortlet provider to use proxy authentication, see the online Help topic that displays when you click Help on the Edit Providers: OmniPortlet Provider page. If the OmniPortlet provider is configured to "Require login for all users," each user must set his or her own login information:

- For page designers, set this in Edit Defaults: Source tab.
- For page viewers, set this on the Personalize screen.

You can also find more information on configuring OmniPortlet in Appendix I, "Configuring the Portal Tools Providers" in the *Oracle Application Server Portal Configuration Guide*, available on the OracleAS Portal Documentation page on OTN.

Note: If you are using the Web Page data source, the Proxy Authentication section displays in the Web Clipping Studio, after you have clicked the Select Web Page button on the Source tab.

3.2.2.2 Connection Information

For each data source except the Web Page data source, the Source step contains a Connection section, where you can define the connection information to access secured data. The Source step for all data sources include a Portlet Parameters section, where you can define the parameters for the portlet. You can then map the portlet parameters to the page-level parameters.

Figure 3–2 Source Tab: Connection and Portlet Parameters Section

Connection

To access secured data, you will need to provide connection information to the data source.

Connection Information <None> Edit Connection

- Use this connection information for all users
- User must re-enter connection information

Portlet Parameters

Parameters are passed to the portlet from the page when the portlet is displayed. These parameters can be mapped to page level para

Parameter Name	Default Value	Customizable	Customize Page Label	Customize P
Param1	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param1"/>	<input type="text" value="Description"/>
Param2	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param2"/>	<input type="text" value="Description"/>
Param3	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param3"/>	<input type="text" value="Description"/>
Param4	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param4"/>	<input type="text" value="Description"/>
Param5	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param5"/>	<input type="text" value="Description"/>

To edit the connection information, click the Edit Connection button and fill out the information on the page shown in [Figure 3–3](#). On this page, you can enter a name for the connection information, as well as the username and password. For the SQL data source, you can enter more information to specify the driver you wish to use to connect to the data source. For more information, refer to [Section 3.2.2.4, "SQL"](#).

Figure 3–3 Edit Connection Page

Connection Name 

Make this named connection available to all users.

Personalizable

Username

Password

Note: For more information about the Connection section and the Edit Connection button, click Help on the Source tab of the OmniPortlet wizard.

3.2.2.3 Spreadsheet

Spreadsheets are a common method of storing small data sets. OmniPortlet enables you to share spreadsheets by supporting character-separated values (CSV) as a data source. On the Source tab, you specify the location of the CSV file. If the file is located on a secure server, you can specify the connection information in the Connection section described in [Figure 3–2](#). You can also select the character set to use when OracleAS Portal reads the file, as well as the delimiter and text qualifier.

Since the OmniPortlet provider exists and executes in a tier different from the OracleAS Portal application and does not have access to the OracleAS Portal session information, you must expose CSV files that are uploaded to OracleAS Portal as PUBLIC in order for OmniPortlet to access them.

Note: For more information on using the CSV data source, refer to [Section 4.3, "Building an OmniPortlet Based on a Spreadsheet \(CSV\)"](#).

Figure 3–4 Source Tab: Spreadsheet



CSV URL

Use first row of spreadsheet for column names

Delimiter Text Qualifier

CSV Character Set Encoding

3.2.2.4 SQL

The relational database is the most common place to store data. OmniPortlet enables you to use standard JDBC drivers and provides out-of-the-box access to Oracle and

any JDBC database. You can specify the driver type when you configure the connection information.

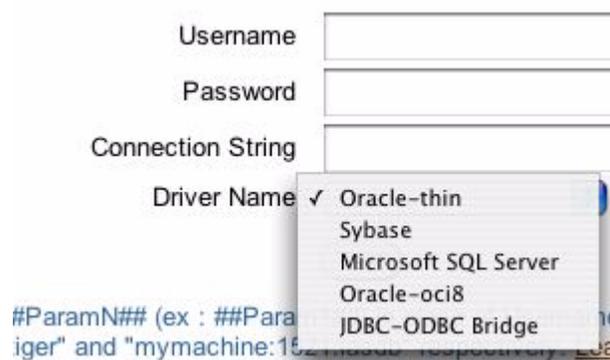
Figure 3-5 Source Tab: SQL



3.2.2.4.1 SQL Connection Information You can also use the DataDirect JDBC drivers to access other relational databases. To configure OmniPortlet to use these drivers, refer to Appendix I, "Configuring the Portal Tools Providers" in the *Oracle Application Server Portal Configuration Guide*, available on the OracleAS Portal Documentation page on OTN

(<http://www.oracle.com/technology/products/ias/portal/documentation.html>). After the driver is installed, you'll notice it listed in the Driver Name drop-down list on the Connection dialog box on the Source tab, as shown in Figure 3-6.

Figure 3-6 Connection Information on the SQL Source Tab



Note: For more information on using DataDirect drivers with OmniPortlet, refer to the "How to Use DataDirect JDBC Drivers with OmniPortlet" technote available on the Portlet Development page of Portal Center (<http://portalcenter.oracle.com>).

For more information about DataDirect drivers in general, refer to the Certification Matrix for Oracle Application Server and DataDirect JDBC (<http://www.oracle.com/technology/tech/java/oc4j/htdocs/datadirect-jdbc-certification.html>) and the OC4J page on OTN (<http://www.oracle.com/technology/software/product/s/ias/htdocs/utilsoft.html>).

When you want to use one of the DataDirect drivers, you must use a unique connection string format: `hostname:port`, where *hostname* is the name of the server where the database is running, and *port* is the listening port of the database. You can see an example in [Figure 3-7](#).

Figure 3-7 Edit Connection Page with DataDirect Driver

3.2.2.5 XML

Although still a relatively new method of storing data, XML is increasingly used to control access to data sets over the intranet, and even the Internet. On the Source tab, you can specify the URL of the XML file that contains your data.

Note: For more information on using the XML data source, refer to [Section 4.4, "Building an OmniPortlet Based on an XML Data Source"](#).

Figure 3-8 Source Tab: XML

Next to the XML URL and the XSL Filter URL fields are Test buttons which you can use to validate your XML data source and the XSL filter.

The specified XML file can either be in tabular (ROWSET/ROW) structure, or you can provide an XML Style Sheet (XSL) to transform the data into the ROWSET/ROW structure. The following image shows an example of the ROWSET/ROW structure of an XML data source.

Figure 3–9 ROWSET/ROW Structure of an XML Data Source

```
<TEAM>
  <EMPLOYEE>
    <DEPTNO>10</DEPTNO>
    <ENAME>KING</ENAME>
    <JOB>PRESIDENT</JOB>
    <SAL>5000</SAL>
  </EMPLOYEE>
  <EMPLOYEE>
    <DEPTNO>20</DEPTNO>
    <ENAME>SCOTT</ENAME>
    <JOB>ANALYST</JOB>
    <SAL>3000</SAL>
  </EMPLOYEE>
</TEAM>
```

In the previous example, the <TEAM> tags delineate the rowset, and the <EMPLOYEE> tags delineate the rows.

Regardless of the format of the XML file, OmniPortlet automatically inspects the XML to determine the column names, which will then be used to define the layout. If you want to specify this information yourself, you can supply a URL to an XML schema that describes the data.

Similar to the other data sources, you can also specify the connection information for this data source, if the XML file is located on a secured server protected by HTTP Basic Authentication.

Note: Since the OmniPortlet provider exists and executes in a different tier from OracleAS Portal and does not have access to the OracleAS Portal session information, you must expose XML files that are uploaded to OracleAS Portal as PUBLIC in order for OmniPortlet to access them.

3.2.2.6 Web Service

A Web Service is a discrete business service that can be programmatically accessed over the Internet using standard protocols, such as SOAP and HTTP. Web Services are non-platform and non-language specific, and are typically registered with a Web Service broker. When you find a Web Service you wish to use, you must obtain the URL to the WSDL (Web Service Description Language) file that describes the Web Service and specifies the methods that can be called, the expected parameters, and a description of the returned data.

OmniPortlet supports both types of Web Services: Document and RPC (Remote Procedure Calls). After a WSDL document/file is supplied, it is parsed, and the available methods that can be called display on the Source tab.

Similar to the XML data source, OmniPortlet expects the Web Service data in ROWSET/ROW format, though you can also use an XSL file to transform the data. OmniPortlet inspects the WSDL document/file to determine the column names, though you may also specify an XML schema to describe the returned data set.

If you are new to Web Services, you may want to first review the *New to Web Services* guide on the Web Services Technology Center page on OTN (<http://otn.oracle.com/tech/webservices/learner.html>).

Note: For more information on using the Web Service data source, refer to [Section 4.2, "Building an OmniPortlet Based on a Web Service"](#).

Figure 3–10 Source Tab: Web Service

WSDL URL

Web Service Methods

Available methods for this Web Service

Enter values for the method parameters

This method does not take any parameters.

TIP You can use the format `##ParamN##` (ex: `##Param1##`) to pass data from the page into the method parameters. [Learn more...](#)

Optionally enter an XSL filter to transform the method output
This is useful when the data is not in `<ROWSET>/<ROW>` format.

XSL Filter URL

Optionally enter an XML Schema to describe the method output
This is useful when the XML data doesn't have data for all fields or to override what is defined in the XML data.

XML Schema URL

TIP You can use the format `##ParamN##` (ex: `##Param1##`) to pass data from the page into the URLs. [Learn more...](#)

3.2.2.7 Web Page

OmniPortlet enables you to use existing Web content as a source of data to publish information to your portal. It provides and renders clipped Web content as a data source.

The Web Page data source extends the scope offered by the Web Clipping Portlet to include scraping functionality. It also supports the following features:

- **Navigation through various login mechanisms**, including form- and JavaScript-based submission, and HTTP Basic and Digest Authentication with cookie-based session management.
- **Fuzzy matching of clippings.** If a Web clipping gets reordered within the source page or if its character font, size, or style changes, it will still be identified correctly by the Web page data source and delivered as the portlet content.
- **Reuse of a wide range of Web content**, including basic support of pages written with HTML 4.0.1 and JavaScript, retrieved through HTTP GET and POST (form submission).

All Web clipping definitions are stored persistently in the Oracle Application Server infrastructure database or on another Oracle database. Any secure information, such as passwords, is stored in encrypted form, according to the DES (Data Encryption Standard), using Oracle Database encryption technology.

The Source tab of the OmniPortlet Wizard enables you to launch the Web Clipping Studio by clicking the Select Web Page button. Once you launch the Web Clipping Studio, you can refer to the Oracle Application Server Web Clipping online Help.

Note: For more information on using the Web Page data source, refer to [Section 4.5, "Building an OmniPortlet Based on a Web Page Data Source"](#).

Figure 3–11 Source Tab: Web Page

Web Page

You can use a web page as a data source. When the portlet is displayed, data is extracted from the web page. Any changes to the data on the web page are automatically reflected in the portlet.

Select the web page and identify an area (clipping) of the page to use as data.

Select Web Page

Portlet Parameters

Parameters are passed to the portlet from the page when the portlet is displayed. These parameters can be mapped to page level parameters by editing the Page Properties.

Parameter Name	Default Value	Customizable	Customize Page Label	Customize Page Description
Param1		<input type="checkbox"/>	Param1	Description for Parar
Param2		<input type="checkbox"/>	Param2	Description for Parar
Param3		<input type="checkbox"/>	Param3	Description for Parar
Param4		<input type="checkbox"/>	Param4	Description for Parar
Param5		<input type="checkbox"/>	Param5	Description for Parar

3.2.3 Filter

After you've selected the data source and specified the data source options, you can further refine your data by using OmniPortlet's filtering options. To use filtering efficiently, it is better to refine the data as much as possible at the data source level on the Source tab, then use the options on the Filter tab to streamline the data. For example, if you are using a SQL data source, you could use a WHERE clause to return only specific data from the specified columns. In this case, you could skip the Filter tab and continue to the View page of the wizard. However, if there are no filtering options at the data source level, you can use the options on the Filter tab to sort your data.

Figure 3–12 Filter Tab

Filter

Use this page to filter and order the data that appears in your portlet.

Conditions

Specify the conditions that the data must meet in order to appear in your portlet. Click the plus sign to specify conditions for additional columns.

Match all Match any

Column	Operator	Value	Actions
<None>	Contains		+

TIP You can use the format `##ParamN##` (ex: `##Param1##`) to pass data from the page into the Value. [Learn more...](#)

Order

Determine how the data should be ordered.

Column	Order
Order by <None>	Ascending
Then by <None>	Ascending
Then by <None>	Ascending

Limit

If desired, limit the number of rows that appear in the portlet.

- Do not limit results
 Limit to results

3.2.4 View

Once you've specified the data and sorted it, you can choose the view options and layout for your OmniPortlet. The View tab enables you to add Header and Footer text, choose a Layout style that you can later refine on the Layout tab, and enable caching. You can choose from the following layouts:

- tabular
- chart
- news
- bullet
- form

Figure 3–13 View Tab

Header Text

Show Header Text

Footer Text

Show Footer Text

TIP You can use the format ##ParamN## (ex: ##Param1##) to pass data from the page into the text, and ##Column Name## (ex: ##DEPTN the text. [Learn more...](#)

Layout Style
Select a layout for the portlet data.

Tabular
 Chart
 News
 Bullet
 Form

Column1	Column2	Column3
Kathleen Bayyat	President - Manufacturing	100000
Robert Rodriguez	President - Sales	100000
Edward Shields	Chief Financial Officer	36000
Jan Francois Stewart	Graphic Artist	36000
Lisa Williams	Graphic Artist	36000
Sandra Kyte	Course Developer	54000
Eaulo Yau	Customer Sales Representative	39000

Caching
If page level caching is not used, then the page will always have to wait for this portlet to generate if the portlet is not cached. This can adversely

Cache the Portlet Content for minutes
 Don't Cache the Portlet Content

Note: For more information on the different layout styles you can use with OmniPortlet, see the next section or click Help in the upper right corner of the page in the OmniPortlet Wizard.

3.2.5 Layout

The Layout tab changes depending on the Layout Style you chose on the View tab, and enables you to further personalize the appearance of your portlet. For example, OmniPortlet supports drill-down hyperlinks in the chart layout. That is, you can set up the chart so that when a user clicks on a specific part of the chart, an action occurs (for example, jump to another URL).

For the other layout styles, you can define each column to display in a specific format, such as plain text, HTML, an image, button, or field. For example, suppose you selected a data source that includes a URL to an image. To see this image, you can select Image for the display of this column. Each column can also be mapped to an action, similar to the behavior of chart hyperlinks.

The following layout styles are available with OmniPortlet:

- [Tabular Layout](#)
- [Chart Layout](#)
- [News Layout](#)
- [Bullet Layout](#)
- [Form Layout](#)

3.2.5.1 Tabular Layout

Figure 3–14 *Layout Tab: Tabular Style*

ay in the table.

Name	Column Label	Column	Alignment	Display As	Action	URL	Open In New Window
Field1	employee_id	employee_id	Left	Text	<None>		<input type="checkbox"/>
Field2	Name	Name	Left	Text	<None>		<input type="checkbox"/>
Field3	Gender	Gender	Left	Text	<None>		<input type="checkbox"/>
Field4	Job	Job	Left	Text	<None>		<input type="checkbox"/>
Field5	Email	Email	Left	Text	<None>		<input type="checkbox"/>

Once you've chosen the tabular style on the View tab, you can refine the layout on the Layout tab. Typically, you use the tabular layout if you have one or more columns of data that you want to display in a table. You can choose Plain to display all rows in the table without any background color, or Alternating to display a background color for every other row in the table.

Note: You can control the background color of a portlet through the portal page style. For more information on using portal page styles, refer to the *Oracle Application Server Portal User's Guide*.

In the Column Layout section, you can choose which data columns to display in the portlet, then select a display format for the data. Here, you can set a column to display a hyperlink, so that a secondary Web page displays when the user clicks that column in the table. You can also specify whether the secondary Web page displays in a new window.

Figure 3–15 *Example of an OmniPortlet Using a Tabular Layout*

Web Service portlet				
List of employees of the RESEARCH department.				
EMPNO	ENAME	JOB	MGR	HIREDATE
7876	ADAMS	CLERK	7788	1987-05-23
7902	FORD	ANALYST	7566	1981-12-03
7566	JONES	MANAGER	7839	1981-04-02
7788	SCOTT	ANALYST	7566	1987-04-19
7369	SMITH	CLERK	7902	1980-12-17

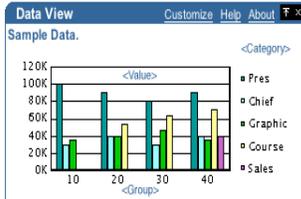
Note: For more information on using the OmniPortlet Wizard, click the Help link in the upper right corner of the Layout tab.

3.2.5.2 Chart Layout

Figure 3–16 Layout Tab: Chart

Chart Style

Bar
 Pie
 Line



Width pixels
 Height pixels
 Legend
 3D Effect

Column Layout

Select the columns to display in the chart.

Column

Group
 Category
 Value

Chart Drilldown

Select the action that will occur when the user clicks on the bar, pie slice or line.

Action	URL	Open In New Window
<input type="text" value="<None>"/>	<input type="text"/>	<input type="checkbox"/>

You can use the chart layout to display your data graphically, as a bar, pie, or line chart. On the Layout tab, you select the chart style and the column layout. When you choose the column layout, you can choose the groups, or columns on which the labels will be based. The category defines the values that will be used to create the chart legend, and the value determines the relative size of the bars, lines, or slices in the chart. You can also select whether the sections of the chart should point to a hyperlink, and whether the targeted information should display in a new window.

Note: To group the information in the chart, you must group the information at the data level (for example, in your SQL query statement). Also, if numeric values in a data source contain formatted strings, commas, or currency (for example, \$32,789.00), they are considered to be text and ignored when the chart is generated. You should remove these formatting characters if you want them to be correctly read as numerical values.

Figure 3-17 Example of the Layout Tab for a Pie Chart Layout

Chart Style

Bar
 Pie
 Line

Data View Customize Help About

Sample Data.

<Value>	<Category>
21.69%	Pres
18.07%	Chief
60.24%	Graphic
	Course
	Sales

10 <Group>

Width: pixels
 Height: pixels
 Legend:
 3D Effect

Column Layout

Select the columns to display in the chart.

Column

Group:
 Category:
 Value:

Chart Drilldown

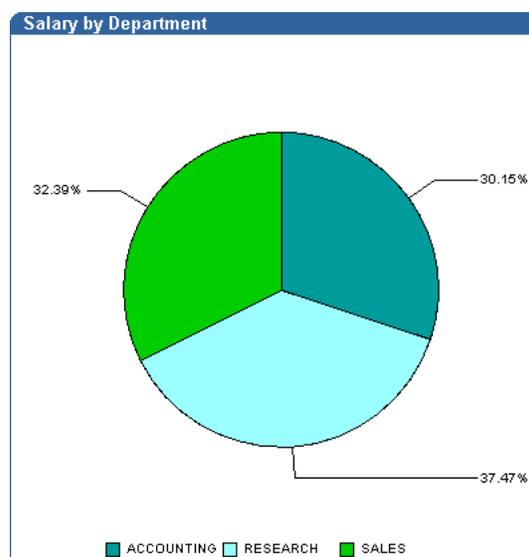
Select the action that will occur when the user clicks on the bar, pie slice or line.

Action	URL
<input type="text" value="<None>"/>	<input type="text"/>

You can also define chart hyperlinks so that each bar, pie section, or line links to another Web page. For example, you can display a chart portlet and a report portlet on your portal page, then set up the chart hyperlink to display a row in the report that displays more detailed information about the selected data.

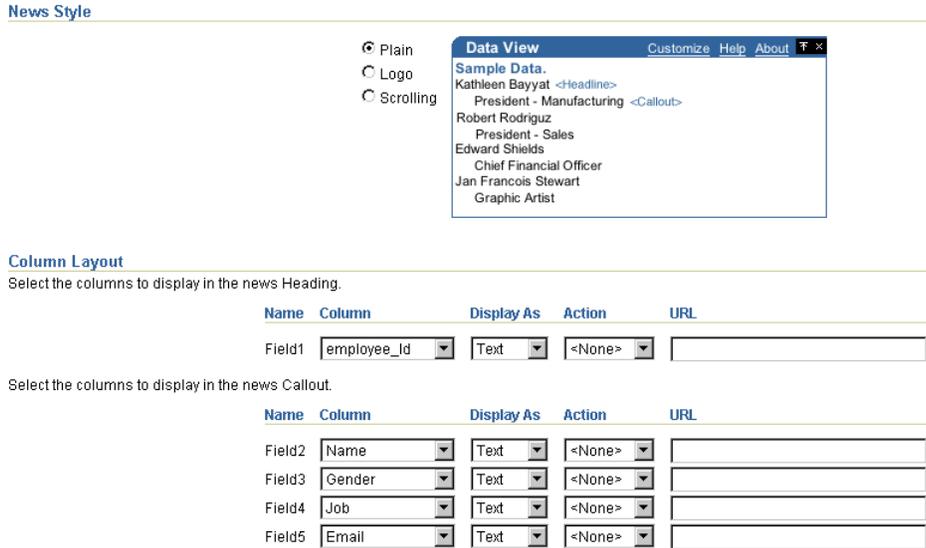
In the image that follows, you can see the results of the options selected on the Layout tab in the previous image. Following the chart, you can see that the category, which was Department on the Layout tab, is used for the legend.

Figure 3-18 Example of an OmniPortlet Using a Pie Chart Layout



3.2.5.3 News Layout

Figure 3–19 *Layout Tab: News*



You can use the news layout to display links to articles with brief descriptions for each. You can use this layout to publish information in standard XML formats, such as RDF (Resource Description Framework) or RSS (RDF Site Summary) to your portal page. In the Column Layout section, you can add a heading that displays at the top of the portlet. You can also add a logo, or use the scrolling layout so that the user can view all the information in the portlet as it moves vertically. Here, also, you can enter a URL so that another Web page displays when the user clicks on specific data in the portlet. You can also specify whether the secondary Web page displays in a new window.

Note: The News Layout Scroll type in OmniPortlet is supported on Microsoft Internet Explorer and Netscape 7.0.

Figure 3–20 *Example of an OmniPortlet Using a News Layout*

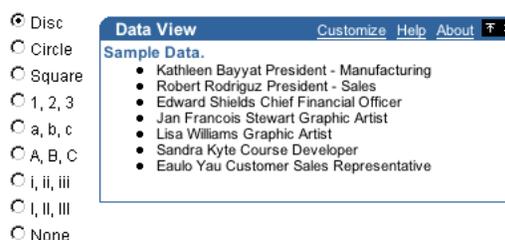


Note: For more information on using the OmniPortlet Wizard, click the Help link in the upper right corner of the Layout tab.

3.2.5.4 Bullet Layout

Figure 3–21 Layout Tab: Bullet

Bullet Style



Column Layout

Select the columns to display in the bullet list.

Name	Column	Display As	Action	URL
Field1	employee_id	Text	<None>	
Field2	Name	Text	<None>	
Field3	Gender	Text	<None>	
Field4	Job	Text	<None>	
Field5	Email	Text	<None>	

You can use the bullet layout to display your data in a bulleted list. The Layout tab provides a variety of different bullet and numbered bullet styles. In the Column Layout section, you can choose how the columns will display in the portlet, as well as whether a second Web page will display when the user clicks that column. You can also specify whether the second Web page displays in a new window.

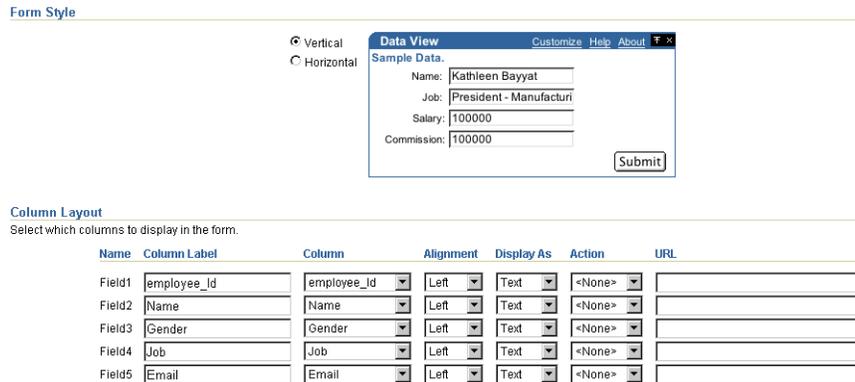
Figure 3–22 Example of an OmniPortlet Using a Bullet Layout



Note: For more information on using the OmniPortlet Wizard, click the Help link in the upper right corner of the Layout tab.

3.2.5.5 Form Layout

Figure 3–23 Layout Tab: Form



You can use the form layout if you have data you want to display as labels or default values in a form, such as Name: <name>. You can then use portlet parameters and events to pass data to the selected row.

You can also specify whether to display the target of a URL in a new window:

Figure 3–24 Open In New Window Check Box

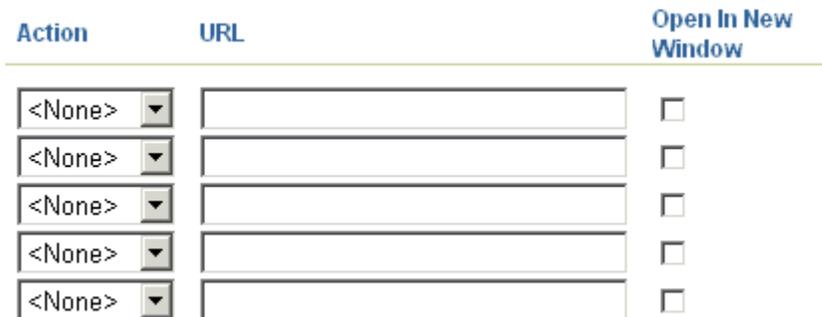


Figure 3–25 Example of an OmniPortlet Using a Form Layout



Note: For more information on using the OmniPortlet Wizard, click the Help link in the upper right corner of the Layout tab.

3.2.6 Edit Defaults mode

After you have created your OmniPortlet and returned to your portal page, you can click the Edit Defaults icon to change the portlet options if required. You will notice that, in the Edit Defaults mode, there are tabs that correspond to the different steps in the OmniPortlet Wizard (except for the Type step) to directly access the different options. There is also one extra tab, the Events tab, which is explained in the next section.

When you edit an OmniPortlet using the Edit Defaults mode, keep in mind the following notes:

- A new mode, "none," is the default setting for the Locale Personalization Level of OmniPortlet and the Simple Parameter form. This mode indicates that, when you edit the portlet defaults using the Edit Defaults mode, the changes apply to all users, regardless of the current OracleAS Portal session language and the locale of your browser. For more information about these settings, refer to Appendix I "Setting the LocalePersonalizationLevel" in the *Oracle Application Server Portal Configuration Guide* on the OracleAS Portal Documentation page on OTN.
- You can personalize the portlet at runtime by clicking the **Personalize** link on the portlet. When you personalize the portlet, a complete copy of the personalization object is created. Since all properties are duplicated, subsequently modifying the portlet through Edit Defaults will not be reflected in the personalized version of the portlet. To ensure the latest changes are made to the portlet, you must click **Personalize** again (after the modifications from the Edit Defaults wizard are made), then select the **Reset to Defaults** option.
- By default, the OmniPortlet provider uses the file-based Preference Store to store the personalization object, which stores the object in a file system in the middle-tier. If you decide to deploy OmniPortlet in a multiple middle-tier environment, you must use a shared Preference Store, such as the database Preference Store (DBPreferenceStore). To do so, you can choose to do one of the following:
 - Use a file-based Preference Store now, then migrate to the database Preference Store later using the PDK Preference Store Migration Utility.
 - Configure OmniPortlet to use the DBPreferenceStore, and follow the steps in Section "5.3.6 Step 6: Configure Portal Tools and Web Providers (Optional)" of the *Oracle Application Server Portal Configuration Guide*.

3.2.7 Events

On the Events tab in the Edit Defaults mode of the OmniPortlet Wizard, you can identify event parameters based on the portlet parameters you selected on the Source tab.

Figure 3–26 Events Tab of the OmniPortlet Wizard

Edit Defaults: OmniPortlet

Event Outputs

Event output can be passed to a target page as page parameters.

When Event1 is raised, pass:

Event1Param1 =

Event1Param2 =

Event1Param3 =

When Event2 is raised, pass:

Event2Param1 =

Event2Param2 =

Event2Param3 =

When Event3 is raised, pass:

Event3Param1 =

Event3Param2 =

Event3Param3 =

3.3 Parameters and Events

Out of the box, OmniPortlet can receive up to five parameters and raise up to three events. Each of the events can send one or more parameters. For example, you can set up a chart that displays the employees in a department. When the user clicks one piece of the chart (for example, a department name), an event is raised that sends a parameter to the page. The page may then pass a parameter to all the portlets on that page that display information about the employees. Then, all the portlets on the page display information about the employees in the selected department.

Note: To learn how to use parameters and events with OmniPortlet, follow the steps in [Chapter 4, "Building Example Portlets with OmniPortlet"](#). If you are comfortable with the `provider.xml` file, you can add more parameters and events by editing the file.

To set up parameters and events, you must first enable the page group to accept parameters and events. In Oracle Application Server 10g, parameters and events are enabled by default. Then, you set up each portlet to accept the necessary parameters, and raise the required events. After you've set up the portlet parameters, you can link the portlets together by setting up the page-level parameters and events.

3.3.1 Portlet Parameters and Events

Out of the box, you can define up to five portlet parameters for an OmniPortlet. You can do this:

- On the Source tab of the wizard when you define the OmniPortlet
- On the Source tab when you select Edit Defaults for the OmniPortlet

Figure 3–27 Source Tab: Portlet Parameters Section

Parameter Name	Default Value	Customizable	Customize Page Label	Customize Page Description
Param1	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param1"/>	<input type="text" value="Description for Parameter 1"/>
Param2	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param2"/>	<input type="text" value="Description for Parameter 2"/>
Param3	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param3"/>	<input type="text" value="Description for Parameter 3"/>
Param4	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param4"/>	<input type="text" value="Description for Parameter 4"/>
Param5	<input type="text"/>	<input type="checkbox"/>	<input type="text" value="Param5"/>	<input type="text" value="Description for Parameter 5"/>

Parameter values determine what data is displayed in the portlet. You can also use a parameter to pass a value in a URL or to embed a value in the portlet text.

Note: You can learn more about portlet parameters in the online Help, which you can access by clicking the Help link on the Source tab in the OmniPortlet Wizard. The online Help describes portlet parameters in detail, and how to set them up for your OmniPortlet. You can also refer to the *Oracle Application Server Portal User's Guide*.

You can set up each OmniPortlet to raise up to three events. Each event can pass up to three parameters. Each parameter can be a portlet parameter, such as Param1, or a data source column, such as Department_No. You set up events on the Events tab in the Edit Defaults mode of OmniPortlet.

Figure 3–28 Events Tab**Event Outputs**

Event output can be passed to a target page as page parameters.

When Event1 is raised, pass:

Event1Param1 =

Event1Param2 =

Event1Param3 =

When Event2 is raised, pass:

Event2Param1 =

Event2Param2 =

Event2Param3 =

When Event3 is raised, pass:

Event3Param1 =

Event3Param2 =

Event3Param3 =

3.3.2 Page Parameters and Events

After you've set up the parameters and events for each OmniPortlet on a portal page, you can map the portlet parameters and events to other portlets on the same page. For more information on using page parameters and events, refer to the OracleAS Portal online Help and the *Oracle Application Server Portal User's Guide*.

3.4 Summary

In this chapter, you learned about OmniPortlet and its capabilities. You also learned about using parameters and events to integrate portlets on a page and create a portal application.

You can find more information about using the various tools in OmniPortlet by clicking the **Help** link on each of the pages in the wizard. For information on using

OmniPortlet, refer to [Chapter 4, "Building Example Portlets with OmniPortlet"](#). For more information on using Web Clipping, refer to [Chapter 5, "Creating Content-Based Portlets with Web Clipping"](#).

Building Example Portlets with OmniPortlet

This chapter shows you how to use OmniPortlet to create four portlets based on different data sources: a Web service, a spreadsheet (CSV), XML, and an existing Web page. You will learn how to create and modify these portlets, as well as use page parameters and events to add interactivity to your portal page.

This chapter includes the following sections:

- [Adding an OmniPortlet Instance to a Portal Page](#)
- [Building an OmniPortlet Based on a Web Service](#)
- [Building an OmniPortlet Based on a Spreadsheet \(CSV\)](#)
- [Building an OmniPortlet Based on an XML Data Source](#)
- [Building an OmniPortlet Based on a Web Page Data Source](#)
- [Setting Up Portlet Parameters and Events](#)

Note: To learn more about specific pages and tabs in OmniPortlet, click the Help link in the top right corner of the wizard. The online Help describes the contents of the selected page or tab. You can also find more information about using OmniPortlet in [Chapter 3, "Creating Portlets with OmniPortlet"](#), or about registering and configuring OmniPortlet with Oracle Application Server Portal in Appendix I, "Configuring the Portal Tools Providers" in the *Oracle Application Server Portal Configuration Guide*.

At the end of this chapter, you will create a page that contains four portlets, as shown in [Figure 4-1](#).

Figure 4–1 Portal Page with Four OmniPortlet Examples

The screenshot shows a web portal interface with the following components:

- Header:** Oracle Application Server Portal logo, 'OmniPortlet Examples' title, and navigation links (Home, Help, Edit, Personalize, Account Info, Logout).
- Weather Forecast Portlet:** A table showing weather data for the week.

Day	High	Low	Precipitation
Monday	55	45	0
Tuesday	85	80	0
Wednesday	61	50	0
Thursday	80	70	0
Friday	63	50	0
Saturday	70	55	0
Sunday	68	50	0
- Travel News Portlet:** A news article titled 'A Temple Town Near Kyoto, Yet Serenely Distant' from The New York Times, describing Nara as a peaceful escape.
- Weather Information Portlet:** A forecast for San Mateo County, mentioning temperatures in the 60s and 80s with a seabreeze of 10 to 20 mph.
- Major U.S. Urban Areas - Population Portlet:** A pie chart showing the population distribution of seven major U.S. cities: New York (28.75%), Los Angeles (23.27%), Chicago (12.76%), Washington (10.51%), San Francisco (9.518%), Dallas (7.601%), and Detroit (7.601%).



All four of these example portlets require you to be able to connect to the Internet. If you must use a proxy server to connect to the Internet, you will need to configure the HTTP proxy settings on the OmniPortlet Provider Test page to use proxy authentication. If the OmniPortlet provider has been set up to use proxy authentication that requires your login, you can enter your user information in the Proxy Authentication section of the Source tab in the OmniPortlet wizard. For more information on proxy authentication, refer to [Section 3.2.2, "Source"](#). For specific information on configuring the provider's proxy settings, refer to the *Oracle Application Server Portal Configuration Guide*, available on the OracleAS Portal Documentation page on OTN.

OmniPortlet is available with OracleAS Portal. However, if you installed the Oracle Application Server Portal Developer Kit separately, instructions on registering and configuring OmniPortlet with Oracle Application Server Portal are located in Appendix I, "Configuring the Portal Tools Providers" in the *Oracle Application Server Portal Configuration Guide*.

Note: The steps in this chapter assume that you are using the OmniPortlet provider that is available with OracleAS Portal. If you installed the Oracle Application Server Portal Developer Kit separately, you may need to slightly modify the instructions when adding an OmniPortlet instance to the page.

4.1 Adding an OmniPortlet Instance to a Portal Page

In this section, you will learn how to add an OmniPortlet instance to your portal page.

To add an OmniPortlet instance to a page:

1. In the Edit mode of the page where you want to add the OmniPortlet, click the **Add Portlets** icon.
2. On the Add Portlets page, in the **Available Portlets** list, click the **Portlet Builders** link.
3. Click the **OmniPortlet** link. You will see OmniPortlet listed in the Selected Portlets list.
4. Click **OK**. The new instance of OmniPortlet now displays on your portal page, as shown in [Figure 4-2](#).

Figure 4-2 *OmniPortlet Instance on a Portal Page*



4.2 Building an OmniPortlet Based on a Web Service

The steps in this section will show you how to create a portlet that displays weather forecast information for a particular zip code. You will base this portlet on the Web Service available on the Oracle Technology Network. You will need Internet access to be able to complete this section.

To create an OmniPortlet based on a Web Service:

1. In the new OmniPortlet instance on your portal page, click the **Define** link to launch the OmniPortlet Wizard.
2. On the Type page, select the **Web Service** radio button, then click **Next**.
3. On the Source page, in the **WSDL URL** field, enter the following URL:
`http://webservices.oracle.com/WeatherWS/WeatherWS?WSDL`

Note: This Web Service has one method (`WeatherWS.giveMeSomeWeatherInfo`) and accepts one parameter (`param0`). If you use a method that has parameters, the parameters will display in this section of the tab. You can enter a sample value for the parameter, then click **Test** to view the sample XML data, the SOAP response, and the SOAP Request.

4. Click **Show Methods**.

- In the Web Service Methods section, in the **param0** parameter field, enter a sample Zip code (for example, 94065), then click **Test**. The Web Service: Test Result window displays, where you can verify the XML data returned by the Web Service, as shown in [Figure 4-3](#).

Figure 4-3 *OmniPortlet: Web Service Test Results Page*

Web Service: Test Result

XML Data

This is the resulting XML data, extracted from the SOAP response body, which will be used to render the portlet. If the extracted "XML Data" is not of <ROWSET>/<ROW> format, you need to apply an XSL filter to convert it to this format.

```
<return xmlns:ns2="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:ns3="http://pdg/WeatherWS.xsd" ns2:arrayType="ns3:pdg_WeatherBean
[7]">
  <item xsi:type="ns3:pdg_WeatherBean">
    <dayOfWeek xsi:type="xsd:string">
      Monday
    </dayOfWeek>
    <hiTemp xsi:type="xsd:int">
      55
    </hiTemp>
    <img xsi:type="xsd:string">
      /WeatherWS/Rainy.gif
    </img>
    <lowTemp xsi:type="xsd:int">
      45
    </lowTemp>
    <precip xsi:type="xsd:int">
      0
    </precip>
```

- Close the window.

The Source page should look like the image shown in [Figure 4-4](#).

Figure 4–4 OmniPortlet: Web Service Source Tab

WSDL URL

Web Service Methods

Available methods for this Web Service

Enter values for the method parameters

param0

TIP You can use the format `##ParamN##` (ex: `##Param1##`) to pass data from the page into the method parameters. Learn more...

Optionally enter an XSL filter to transform the method output
This is useful when the data is not in `<ROWSET>/<ROW>` format.

XSL Filter URL

Optionally enter an XML Schema to describe the method output
This is useful when the XML data doesn't have data for all fields or to override what is defined in the XML data.

Note: If you do not have access to the Internet, you can use the another Web Service, but keep in mind that your results will not match the example in this chapter.

7. Click **Next**.
8. On the Filter page, click **Next**.
9. On the View page, in the Title field, enter `Weather Forecast`.
10. In the Header Text field, enter `Forecast per Zip Code`.
11. Make sure the **Show Header Text** check box is selected, and clear the **Show Footer Text** check box, as shown in [Figure 4–5](#).

Figure 4–5 OmniPortlet: Web Service View Tab

Title

Header Text

Show Header Text

Footer Text

Show Footer Text

12. Make sure the **Tabular** radio button is selected, then click **Next**.
13. On the Layout page, select the **Plain** radio button.
14. Specify the **Column Label**, **Column**, and **Display As** properties for your data according to the following table:

Table 4–1 Column Properties for the Weather Forecast Portlet

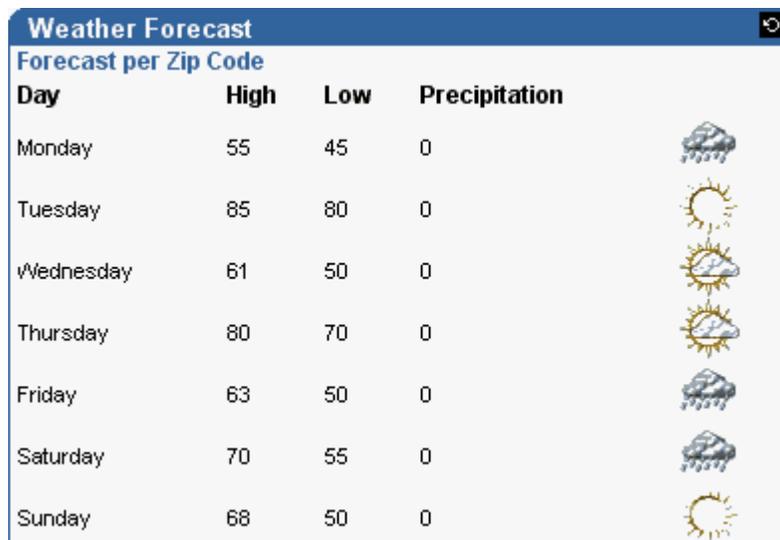
Column Label	Column	Display As
Day	dayOfWeek	Text
High	hiTemp	Text
Low	lowTemp	Text

Table 4–1 (Cont.) Column Properties for the Weather Forecast Portlet

Column Label	Column	Display As
Precipitation	precip	Text
(Blank)	img	Image

15. Now that you’ve completed defining the portlet, click **Finish**. Your portlet should look like [Figure 4–6](#).

Figure 4–6 OmniPortlet: Web Service Portlet



4.3 Building an OmniPortlet Based on a Spreadsheet (CSV)

The steps in this section show you how to use OmniPortlet to define a portlet that displays regional information based on a spreadsheet (CSV) data source. This portlet will display the population of major U.S. urban areas in a pie chart.

To create an OmniPortlet based on a spreadsheet:

1. Create a region below the existing region on your portal page.
2. Add an OmniPortlet to this new region.
3. Launch the OmniPortlet Wizard by clicking the **Define** link.
4. On the Type page, select the **Spreadsheet** radio button, then click **Next**.
5. On the Source page, in the **CSV URL** field, replace the existing text with the following CSV:

```
http://webservices.oracle.com/WeatherWS/city_population.csv
```

Note: If you do not have access to the Internet, you can use the default URL, but keep in mind that your results will not match the example in this chapter.

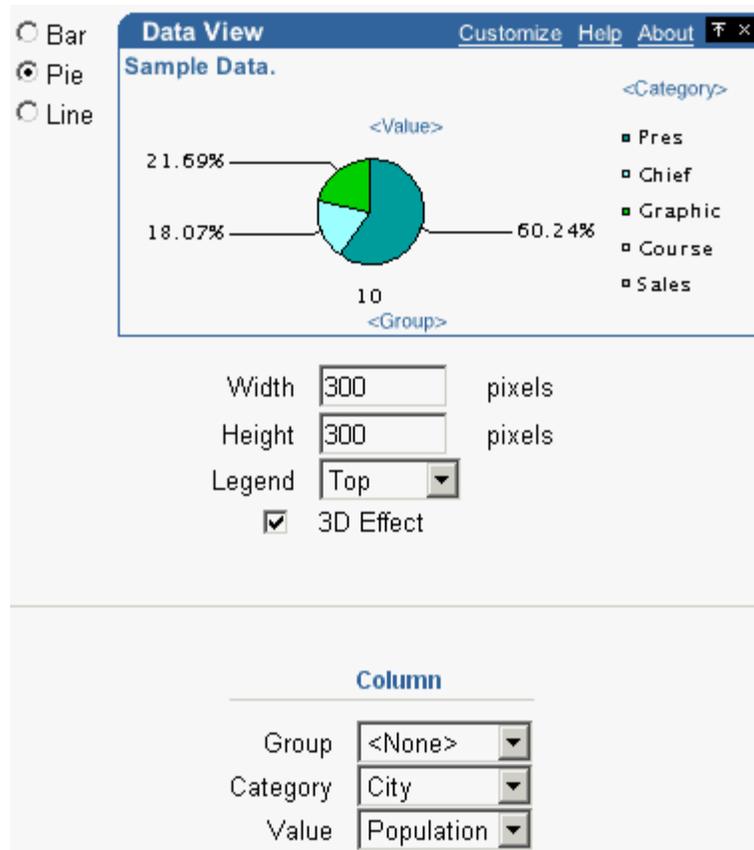
6. Click **Next**.
7. On the Filter page, click **Next**.

8. On the View page, in the **Title** field, enter Major U.S. Urban Areas - Population.
9. Clear the **Show Header Text** check box.
10. In the Footer Text field, enter Click a pie section to view the population of the specified urban area.

Note: The text you just entered in the Footer Text field instructs your end users to click a pie section to view more details about the selected population. To enable this feature, you will need to complete the steps in [Section 4.6, "Setting Up Portlet Parameters and Events"](#).

11. Ensure that the **Show Footer Text** check box is selected.
12. Under Layout Style, select the **Chart** radio button, then click **Next**.
13. On the Layout page, select the **Pie** radio button.
14. In the **Width** field, enter 300.
15. In the **Height** field, enter 300.
16. From the **Legend** list, choose **Top**.
17. Select the **3D Effect** check box.
18. Under Column Layout, from the **Group** list, choose **<None>**.
19. From the **Category** list, choose **City**.
20. From the **Value** list, choose **Population**. The Layout tab should now look like the image shown in [Figure 4-7](#).

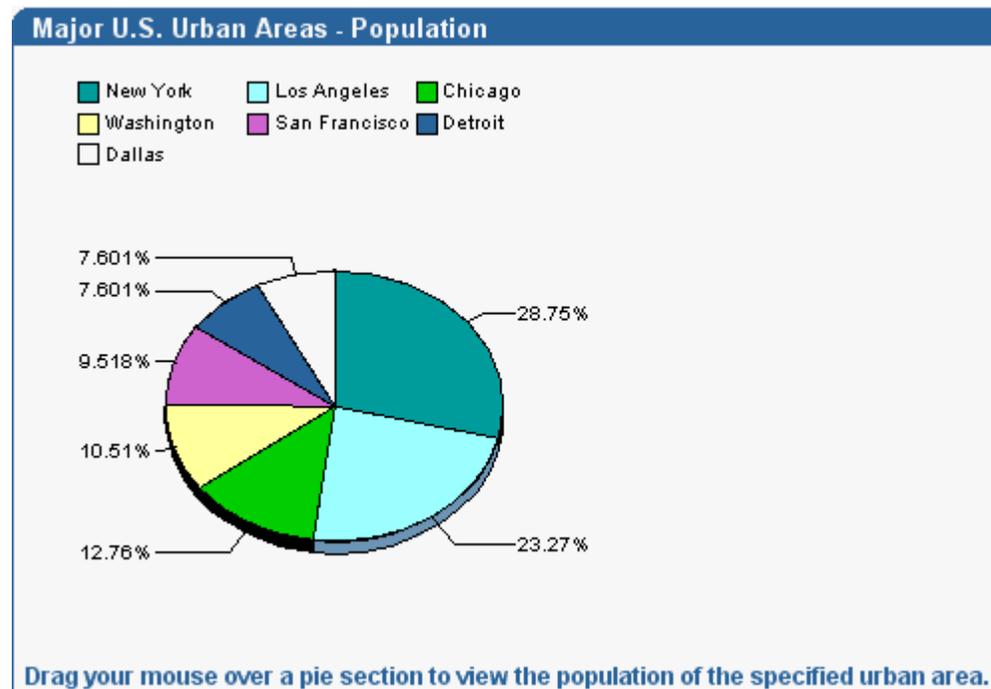
Figure 4–7 OmniPortlet: Character-Separated Values (CSV) Layout Tab



21. Click **Finish**.

Your portlet now displays on your portal page below the Weather Forecast portlet, and should look like [Figure 4–8](#).

Figure 4-8 OmniPortlet: CSV OmniPortlet on the Page



4.4 Building an OmniPortlet Based on an XML Data Source

The steps in this section will show you how to use OmniPortlet to define a portlet that displays news information in a scrolling layout, based on an XML data source.

To create an OmniPortlet based on an XML data source:

1. Create a region next to the Web Services portlet (Weather Forecast) on your portal page.
2. Add an OmniPortlet to this new region.
3. Launch the OmniPortlet Wizard by clicking the **Define** link.
4. On the Type page, select the **XML** radio button, then click **Next**.
5. On the Source page, in the **XML URL** field, enter the following URL:

```
http://www.nytimes.com/services/xml/rss/nyt/Travel.xml
```

Note: If you do not have access to the Internet, you can use a different RSS feed, but keep in mind that your results will not match the images in this example.

6. In the **XSL Filter URL** field, enter the following URL for the XSL file:

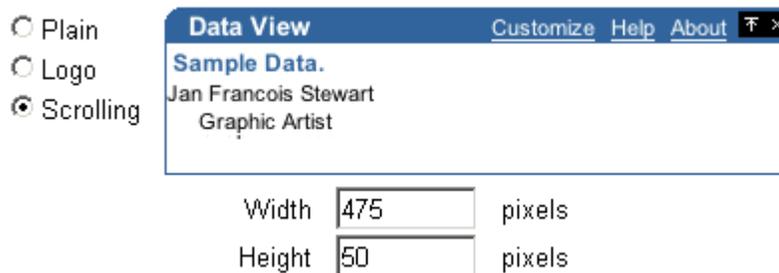
```
http://www.oracle.com/technology/products/ias/portal/viewlets/omniportletnews.xsl
```

Note: This XSL filter transforms the RSS news feed into the ROWSET/ROW structure that OmniPortlet can consume.

7. Click **Next**.
8. On the Filter page, click **Next**.
9. On the View page, in the **Title** field, enter `Travel News`.
10. Clear the **Show Header Text** check box.
11. In the Footer Text field, enter `Source: The New York Times`.
12. Ensure that the **Show Footer Text** check box is selected.
13. Under Layout Style, select the **News** radio button, then click **Next**.
14. On the Layout page, under News Style, select the **Scrolling** radio button.
15. In the **Width** field, enter 475.
16. In the **Height** field, enter 50.

The News Style section of the Layout tab should now look like the image shown in [Figure 4-9](#).

Figure 4-9 OmniPortlet: XML Layout Tab - News Style



17. Under Column Layout, next to Field 1 choose **title** from the **Column** list, **Hyperlink** from the Action list, and enter `##link##` in the URL field, as shown in [Figure 4-10](#).

Figure 4-10 OmniPortlet: News Style Column Layout

Name	Column	Display As	Action	URL
Field1	title	Text	Hyperlink	##link##

18. Next to Field2, choose **description** from the **Column** list and leave the default values for the other settings. Ensure this section of the Layout tab looks like [Figure 4-11](#).

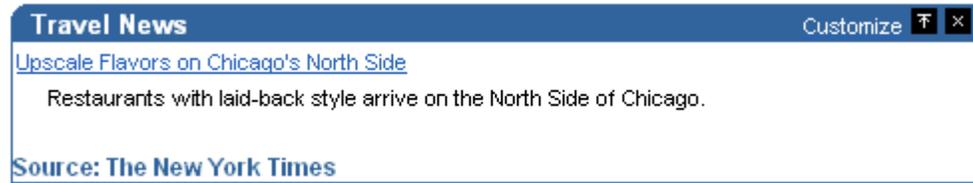
Figure 4-11 Column Layout Section of the Layout Tab

Name	Column	Display As	Action	URL
Field1	title	Text	Hyperlink	##link##
Field2	description	Text	<None>	
Field3	<None>	Text	<None>	
Field4	<None>	Hidden	<None>	
Field5	<None>	Hidden	<None>	

19. Click **Finish**.

Your portlet now displays on your portal page, as shown in [Figure 4–12](#).

Figure 4–12 *OmniPortlet: XML Scrolling News OmniPortlet on the Page*



4.5 Building an OmniPortlet Based on a Web Page Data Source

The steps in this section will show you how to use OmniPortlet to create a portlet that displays weather information in a text format based on an existing Web Page. In this section, you will use OmniPortlet to clip and scrape content from Web sites.

To create an OmniPortlet based on a Web page data source:

1. Create a region on your portal page.
2. Add an OmniPortlet to this new region.
3. Launch the OmniPortlet Wizard by clicking the **Define** link.
4. On the Type tab of the OmniPortlet Wizard, select the **Web Page** radio button, then click **Next**.
5. On the Source tab, click **Select Web Page**.
6. On the Web Clipping Studio page that displays, in the **URL Location** field, enter the URL of the page you want to clip:

`http://www.wunderground.com`

Note: You can use a different Web page, but keep in mind that your results will not match the example in this chapter.

Figure 4–13 *URL Location Field*

URL Location

Note: In this example, we use a third party Web site owned by The Weather Underground, Inc. Because this Web site is continually updated based on current weather forecasts, the images and steps included in this section may not reflect exactly what you see when you create this example. As you go further into this example, some of the steps may not work, as the owners may change the technology of this third party Web site.

7. Click **Start** to display the Web Clipping Studio. You should see the Web page display in the Web Clipping Studio, as shown in [Figure 4–14](#).

Figure 4–14 Web Clipping Studio Containing the www.wunderground.com Home Page



- On the home page, enter a zip code (for example, 94065) in the **Weather** field, as shown in Figure 4–15, then click the magnifying glass icon next to the field.

Figure 4–15 Entering the Zip Code 94065 into the Weather Field



- The weather information for Redwood City, California displays in the Web Clipping Studio. A segment of the page is shown in Figure 4–16.

Figure 4–16 Weather Information for Redwood City, California



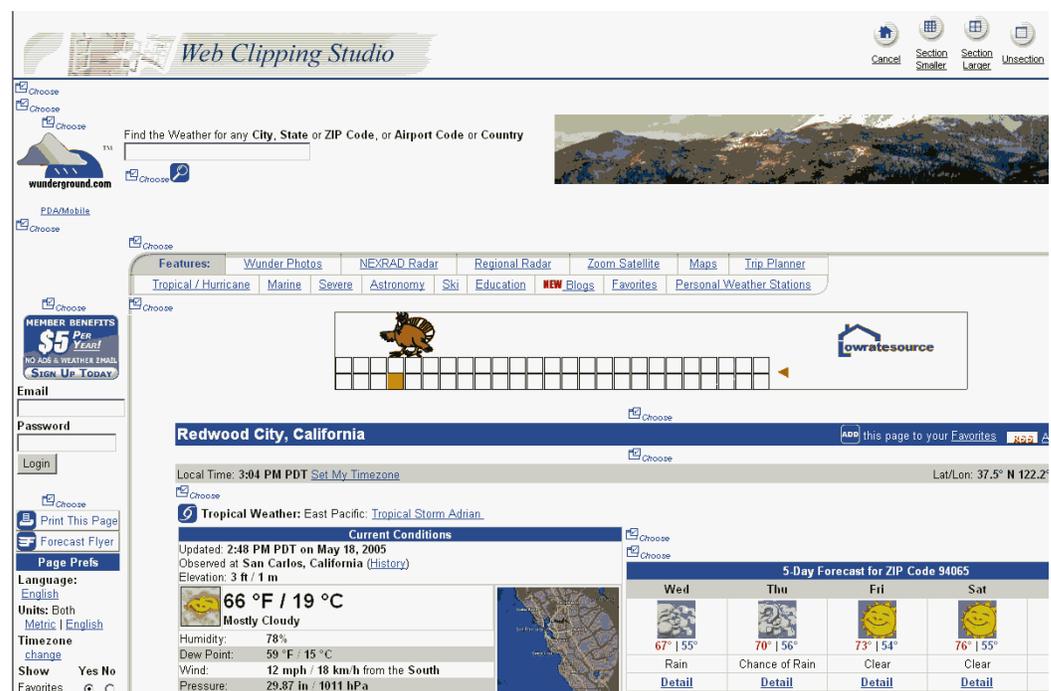
- In the top right corner of the Web Clipping Studio, click the **Section** button, as shown in [Figure 4-17](#).

Figure 4-17 The Section Button



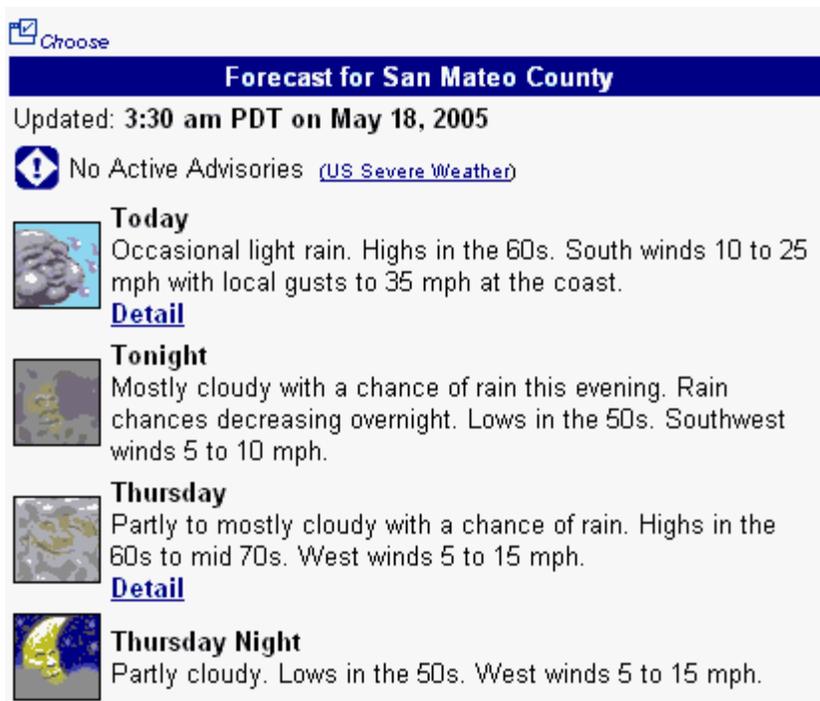
- After you click the Section button, you'll notice that the elements of the Web page are broken down, and that a new icon displays called Choose at the top of each section. [Figure 4-18](#) shows a snapshot of the Web Clipping Studio.

Figure 4-18 Web Clipping Studio Displaying the Web Page Sections



- Find the section shown in [Figure 4-19](#), which shows the weather information for the city you chose (in this example, San Mateo County).

Figure 4–19 Weather Information for San Mateo County with the Choose Icon



- Click the **Choose** icon for this section, located directly above the "Forecast for San Mateo County" title bar, as shown in Figure 4–19. The section displays in the Web Clipping Studio, as shown in Figure 4–20.

Figure 4–20 Weather Information Section for San Mateo County in the Web Clipping Studio



- After you have chosen the clipping, you can refine your data further by scraping the data, that is, selecting specific cells you wish to display in your portlet. Click the **Scrape** button.

Figure 4–21 The Scrape Button



15. While in Scraping mode, you can identify the text pieces in the Web clipping by selecting the check boxes next to each item. You can repeat these items at the column level, row level, or table level.

In this example, we want to show the title and the description of each resulting article from our search. We can repeat the title and description at the row level, so that each result returned by the search displays only the title and the description of every result. In general, you choose the text items in the first row that contains all the pieces you wish to repeat for each row.

After you click the Scrape button, you'll notice that check boxes display next to each item on the Web page, as shown in [Figure 4-22](#).

Figure 4-22 Scraping Check Boxes



16. Select the output you want by selecting the check boxes next to the items. [Figure 4-23](#) shows an example of a check box.

Figure 4-23 Check Box for San Mateo County Title



Note: Depending on the color of the section you want to select, the check boxes may not be prominently displayed.

17. After you select the check box for “Forecast for San Mateo County,” notice that a corresponding label displays in the Data section of the Web Clipping Studio at the bottom of the screen, as shown in [Figure 4-24](#).

Figure 4-24 San Mateo County Label in Data Section

NAME	VALUE
DefaultNameForForecastforSanMate	Forecast for San Mateo County

18. In the Name field, enter a more meaningful name, such as "SanMateoCountyForecast." Do not include spaces in the name.
19. Select the fields you wish to display and add the corresponding labels as you select them. The following is a list of sample information we chose for this example, but you can choose your own examples depending on the current weather. You can see the selected weather information in [Figure 4-25](#).
- Forecast for San Mateo County title
 - Today

- Today's Weather
- Thursday
- Thursday's Weather

Figure 4–25 Selected Weather Information

Forecast for San Mateo County

Updated: 3:30 am PDT on May 18, 2005

No Active Advisories

Today
Occasional light rain. Highs in the 60s. South winds 10 to 25 mph with local gusts to 35 mph at the coast.

Tonight
Mostly cloudy with a chance of rain this evening. Rain chances decreasing overnight. Lows in the 50s. Southwest winds 5 to 10 mph.

Thursday
Partly to mostly cloudy with a chance of rain. Highs in the 60s to mid 70s. West winds 5 to 15 mph.

Thursday Night
Partly cloudy. Lows in the 50s. West winds 5 to 15 mph.

Friday
Partly cloudy. Highs in the 60s to upper 70s. Northwest winds 5 to 15 mph increasing to 15 to 25 mph in the afternoon.

Friday Night
Mostly clear. Lows in the 40s to upper 50s.

Data
Use to identify a cell of data. Then use the "More" and "Less" buttons to expand your selection to include more or less data within the clipping. When Clipping toolbar.

NAME	VALUE
SanMateoCountyForecast	Forecast for San Mateo County
ThursdayWeather	Partly to mostly cloudy wi...
TodayWeather	Occasional light rain. Hig...
Today	Today
Thursday	Thursday

More Less

Note: With the Web page data source, you can select URLs as part of your Web clipping. In Oracle Application Server Portal 10.1.2 and later, the context of the application is maintained. So, for example, any images that display on the hyperlinked page will be maintained.

20. Now that you've selected the data you want to display, click the **Continue** button, as shown in Figure 4–26.

Figure 4–26 The Continue Button



21. On the page that displays, verify that the information in the Clipping Attributes section includes the title: "Weather Underground: Redwood City, California Forecast," as shown in [Figure 4-27](#).

Figure 4-27 Clipping Attributes Section of the Web Clipping Studio

Title	Weather Underground: Redwood City, California (94065) F
Description	New Desc
Time Out (seconds)	21

22. Verify that the information in the Clipping Parameters section includes the parameters as shown in [Figure 4-27](#).

Figure 4-28 Clipping Parameters Section of the Web Clipping Studio

Index	URL	URL Parameter	Clipping Parameter?	Name	Value
0	http://www.wunderground.com	none	N/A		
1	http://www.wunderground.com/cgi-bin/findweatl	query	<input type="checkbox"/>	query	94065

23. Select the **Clipping Parameter?** check box for the second parameter with the name "query."
24. Click **OK**.
25. On the Source tab of the OmniPortlet Wizard, the new title and description now display. To edit the Web clipping in the Web Clipping Studio, you can click the **Select Web Page** button again, as shown in [Figure 4-29](#).

Figure 4-29 Web Page Source Tab

Title:	Weather Underground: Redwood City, California (94065) Forecast
Description:	New Desc
Timeout (ms):	25000
<input type="button" value="Select Web Page"/>	

26. Under the Clipping Parameters heading, you should see the clipping parameter you set on the previous page, as shown in [Figure 4-30](#):

Figure 4-30 Clipping Parameter to Portlet Parameter Mapping

Clipping Parameter	Portlet Parameter	Original Value
query	Param1	94065

27. Under the Portlet Parameters heading, next to Param1, set the **Default Value** to the zip code, 94065, as shown in [Figure 4-31](#).

Figure 4–31 Portlet Parameters Section

Portlet Parameters

Parameters are passed to the portlet from the page when the portlet is displayed. These parameters can be mapped to page level parameters by editing the Page Properties.

Parameter Name	Default Value	Personalizable	Personalize Page Label	Personalize Page Description
Param1	94065	<input type="checkbox"/>	Param1	Description for Parameter 1
Param2		<input type="checkbox"/>	Param2	Description for Parameter 2
Param3		<input type="checkbox"/>	Param3	Description for Parameter 3
Param4		<input type="checkbox"/>	Param4	Description for Parameter 4
Param5		<input type="checkbox"/>	Param5	Description for Parameter 5

28. Click **Next**.
29. On the Filter tab, click **Next**.
30. On the View tab, in the Title field, enter **Weather Information**.
31. In the Footer Text field, enter **Source: Weather Underground** and make sure the **Show Footer Text** check box is selected.
32. Under Layout Style, select the **News** radio button. The View tab should look like [Figure 4–32](#).

Figure 4–32 View Tab with the Options Selected

33. Click **Next**.
34. Verify that the Layout tab looks like [Figure 4–33](#).

Figure 4–33 Layout Tab

35. Click **Finish**.
36. Your new Web Page portlet displays on the portal page, and should look like [Figure 4-34](#).

Figure 4-34 Weather Information Portlet on the Portal Page

Weather Information.

Forecast for San Mateo County

Occasional light rain. Highs in the 60s. South winds 10 to 25 mph with local gusts to 35 mph at the coast.

Today

Partly to mostly cloudy with a chance of rain. Highs in the 60s to mid 70s. West winds 5 to 15 mph.

Thursday

Source: [Weather Underground](#)

Now that you have completed building all four example OmniPortlets, your page should look like [Figure 4-35](#).

Figure 4-35 Portal Page Displaying the Four Example OmniPortlets

Oracle Application Server
Portal

OmniPortlet Examples

Home Help
Edit Personalize Account Info Logout

Weather Forecast Personalize

Forecast per Zip Code

Day	High	Low	Precipitation
Monday	55	45	0
Tuesday	85	80	0
Wednesday	61	50	0
Thursday	80	70	0
Friday	63	50	0
Saturday	70	55	0
Sunday	68	50	0

Travel News Personalize

[A Temple Town Near Kyoto, Yet Serenely Distant](#)

A Temple Town Near Kyoto, Yet Serenely Distant

Nara, with its serene temples and enchanted forest, is an antidote to its noisy neighbor.

Source: [The New York Times](#)

Weather Information Personalize

Forecast for San Mateo County

Mostly sunny. Highs from the lower 60s coastside to the 80s inland. Afternoon seabreeze 10 to 20 mph.

Today

Mostly sunny. Areas of morning low clouds and fog... clearing to the coast by midday. Highs from the upper 50s and lower 60s coastside to the 80s inland. Afternoon seabreeze 10 to 20 mph.

Tuesday

Source: [Weather Underground](#)

Major U.S. Urban Areas - Population Personalize

Legend: New York (blue), Los Angeles (green), Chicago (black), Washington (white), San Francisco (pink), Detroit (dark blue), Dallas (light blue)

Pie chart showing population percentages:

- New York: 28.75%
- Los Angeles: 23.27%
- Chicago: 12.78%
- Washington: 10.51%
- San Francisco: 9.518%
- Detroit: 7.601%
- Dallas: 7.601%

Drag your mouse over a pie section to view the population of the specified urban area.

4.6 Setting Up Portlet Parameters and Events

The steps in this section show you how to set up the portlets and page you created to use parameters. Then, when a user clicks a slice of the pie chart (generating a portlet

event) that corresponds to a region (for example, New York), the Weather Forecast per Zip Code portlet (based on a Web Service) and the Weather Information portlet (based on a Web page) will display the corresponding weather information for that region (New York).

To set up portlet parameters and events, you will need to:

- [Configure Portlets to Accept Parameters](#)
- [Map the Page Parameter to the Portlet Parameters](#)
- [Configure the Chart Portlet to Use Events](#)
- [Map the Chart Event to the Page](#)

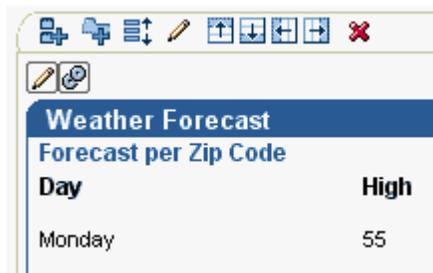
4.6.1 Configure Portlets to Accept Parameters

The steps in this section will show you how to configure the two portlets on your page that accept parameters (the Web Service portlet that displays Weather Forecast per Zip Code information and the Web page portlet that displays Weather Information).

To configure the two portlets to accept parameters:

1. In Edit mode of the page, click the **Edit Defaults** icon in the top left corner of the Web Services portlet, as shown in [Figure 4–36](#).

Figure 4–36 Edit Defaults Icon in the Web Services Portlet



2. On the Source tab, replace the value of `param0` (94065) with `##Param1##`, as shown in [Figure 4–37](#).

Figure 4–37 `param0` Set to `##Param1##`

Enter values for the method parameters

param0

3. Under **Portlet Parameters**, set the default value of Param1 to 94065.
4. In the **Personalize Page Label** field, enter zip.
5. In the **Personalize Page Description** field, enter Enter zip code, as shown in [Figure 4–38](#).

Figure 4–38 Portlet Parameters Section of the Web Services Source Tab

Parameter Name	Default Value	Personalizable	Personalize Page Label	Personalize Page Description
Param1	94065	<input type="checkbox"/>	Zip	Enter zip code
Param2		<input type="checkbox"/>	Param2	Description for Parameter 2
Param3		<input type="checkbox"/>	Param3	Description for Parameter 3
Param4		<input type="checkbox"/>	Param4	Description for Parameter 4
Param5		<input type="checkbox"/>	Param5	Description for Parameter 5

- Click OK.
- On the portal page, in Edit mode, click the **Edit Defaults** icon for the Web page portlet, as shown in [Figure 4–39](#).

Figure 4–39 Edit Defaults Icon for the Web Page Portlet

- On the Source tab, since you have already mapped a portlet parameter to the clipping parameter, you can simply add a label and description to the portlet parameter Param1, as shown in [Figure 4–40](#).

Figure 4–40 Portlet Parameters Section of the Web Page Source Tab

Parameter Name	Default Value	Personalizable	Personalize Page Label	Personalize Page Description
Param1	94065	<input type="checkbox"/>	Zip	Enter zip code
Param2		<input type="checkbox"/>	Param2	Description for Parameter 2
Param3		<input type="checkbox"/>	Param3	Description for Parameter 3
Param4		<input type="checkbox"/>	Param4	Description for Parameter 4
Param5		<input type="checkbox"/>	Param5	Description for Parameter 5

- Click OK.

You have created two portlet parameters in the Web Services and Web page portlets to accept page parameters. Next, you will map a page parameter to these two portlet parameters.

4.6.2 Map the Page Parameter to the Portlet Parameters

The steps in this section will show you how to map the page parameters to the two portlets you configured in the previous section.

To map the page parameter to the portlet parameters:

- On the page, in Edit mode, click the Page: **Properties** link at the top of the screen.

Figure 4–41 Page: Properties Link

2. Click the **Parameters** tab.
3. Under **New Page Parameter**, in the **Parameter Name** field, enter `zip`, then click **Add**, as shown in [Figure 4-42](#).

Figure 4-42 *New Page Parameter*

4. Under **Page Parameter Properties**, the new page parameter displays. In the **Default Value** field, enter `94065`, as shown in [Figure 4-43](#).

Figure 4-43 *Default Value for the "zip" Page Parameter*

Name	Display Name	Default Value
✘ zip	zip	94065

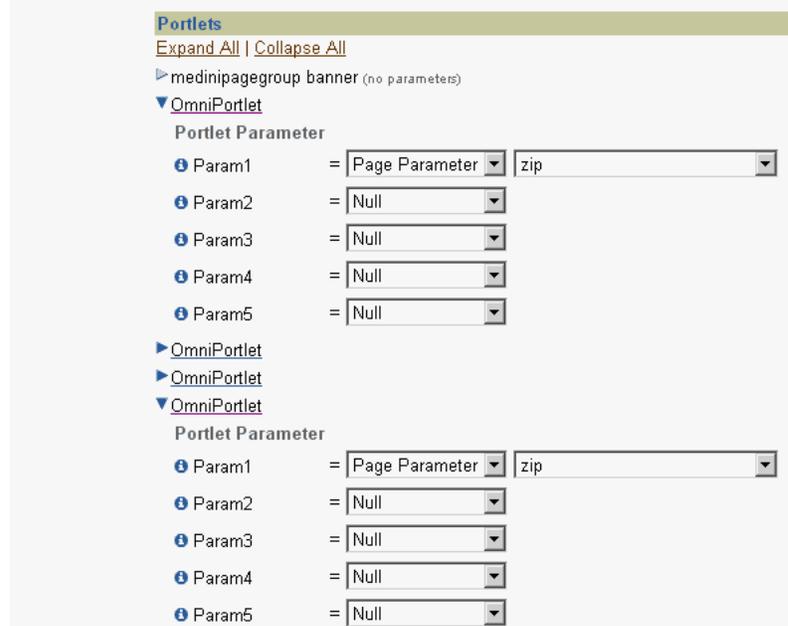
5. Under **Portlet Parameter Values**, you will see a list of portlets listed. If you have followed all the steps in this chapter, you will see four instances of **OmniPortlet** listed. The **Web Services** portlet is the first in the list, and the **Web Page** data source is the fourth (or the bottom) instance of **OmniPortlet** in the list.
6. Click the arrow next to the first instance of **OmniPortlet** to expand the **Portlet Parameters** list, as shown in [Figure 4-44](#).

Figure 4-44 *Portlet Parameter Values Section*

7. Next to **Param1**, from the list, choose **Page Parameter**.
8. From the list that displays, ensure that **zip** is selected.
9. For the fourth **OmniPortlet** in the list, follow the same steps to set **Param1** to the **Page Parameter** of `zip`, as shown in [Figure 4-45](#).

Figure 4–45 Portlet Parameters Section of the Page Parameters Tab**Portlet Parameter Values**

Expand a portlet to view its parameters and specify how to set the values of those parameters. You can also specify default values.



The page parameter `zip` is now mapped to the portlet parameters for the Web Services and Web page portlets. Next, you will set up the chart portlet so that when a slice of the pie chart is clicked, the selected zip code will be sent to the page.

4.6.3 Configure the Chart Portlet to Use Events

The steps in this section will show you how to configure the chart portlet to use events. That is, based on an event in the portlet (such as clicking a slice in a pie chart), an event will occur. In this case, you will configure the portlet so that when a slice is clicked by an end user, the zip code associated with that slice will be sent to the page. Then, the data in the two portlets you configured in [Section 4.6.1, "Configure Portlets to Accept Parameters"](#) will refresh depending on the selected zip code.

To configure the chart portlet:

1. In the Edit mode of the page, click the **Edit Defaults** icon for the chart portlet, as shown in [Figure 4–46](#).

Figure 4–46 Edit Defaults Icon for the Chart Portlet

2. Click the **Layout** tab.

3. Under Chart Drilldown, choose **Event1** from the Action list.
4. Notice that in Edit Defaults mode, a new tab displays in the wizard called Events. Click the **Events** tab.
5. On this tab, you will configure Event1 (which you set on the Layout tab) to pass the zip code from the chart to the page as the event output.
Set Event1Param1 to **zipcode**, as shown in [Figure 4-47](#), then click **OK**.

Figure 4-47 Events Tab for the Chart Portlet

When Event1 is raised, pass:

Event1Param1 =	zipcode
Event1Param2 =	<Null>
Event1Param3 =	<Null>

You have configured the chart portlet so that a user can click a slice of the pie chart, and set up an event so that the zip code selected in the pie chart will be sent to the page. Next, you will set up the page to accept this event parameter.

4.6.4 Map the Chart Event to the Page

The steps in this section will show you how to map the chart event you created in the previous section to the page, so that when a user clicks on a slice of the pie chart, the zip code selected in the pie chart will be accepted by the page as the page input. The page will then display the data that corresponds to the selected zip code in the Web Service and Web page portlets.

To map the chart event to the page:

1. On the page, in Edit mode, click the Page: **Properties** link, then click the **Events** tab.
2. Expand the second OmniPortlet in the list to display the events, and select **Event1**, as shown in [Figure 4-48](#).

Figure 4-48 Portlet Events Section of the Page Events Tab

3. Select the **Go to page** radio button, then, next to the field, click the **Browse Pages** icon to search for the name of your page (in this case, `OmniPortlet Examples`). Next to your page name, click **Return Object**.

Note: If you do not know the name of the page, you can return to the Edit mode of the page by clicking Cancel. Then, click the Page Group: **Properties** link to view the display name of the page group. When you return to the Events tab of the Page Properties, you can click the **Browse Pages** icon to search for the page group, under which you should see the page name.

4. Set the **Page Input** as shown in [Figure 4–49](#).

Figure 4–49 Page Input on the Events Tab

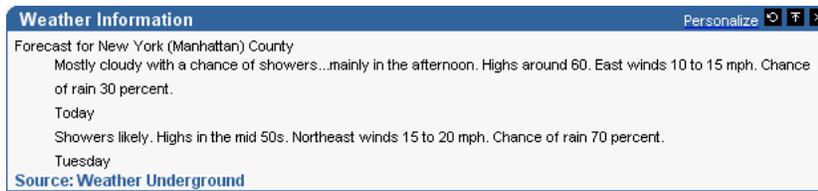
5. Click **OK**.
6. Now, when you drag your mouse over the pie chart in the Chart portlet, you should notice that you can click one of the sections. Try clicking on the largest slice (New York). You will notice that the page refreshes.

In the URL of the page, you should see a parameter value set after the page name, for example: `OmniPortlet%20Examples?zip=10001`. The Weather Forecast information changes, and looks something like [Figure 4–50](#).

Figure 4–50 Weather Forecast (Web Service) Portlet for New York

Day	High	Low	Precipitation
Monday	55	45	0
Tuesday	68	50	0
Wednesday	70	55	0
Thursday	63	50	0
Friday	80	70	0
Saturday	61	50	0
Sunday	85	80	0

The Weather Information portlet changes, and looks something like [Figure 4–51](#).

Figure 4–51 Weather Information (Web Page) Portlet for New York

4.7 Summary



In this chapter, you learned how to use OmniPortlet to build various types of portlets on a page. You also learned how to use parameters and events to integrate portlets on a page and create a portal application. You can find more information about using the various tools in OmniPortlet by clicking the **Help** link on each of the pages in the wizard. To learn more about parameters and events, refer to the *Oracle Application Server Portal User's Guide* available on OracleAS Portal Documentation page on OTN (<http://www.oracle.com/technology/products/ias/portal/documentation.html>)

Creating Content-Based Portlets with Web Clipping

Web Clipping is a browser-based declarative tool that enables you to integrate any Web application with OracleAS Portal. It is designed to give you quick integration by leveraging the Web application's existing user interface. Web Clipping has been implemented as a Web provider using the Java Portal Developers Kit, which is a component of OracleAS Portal.

With Web Clipping, you can collect Web content into portlets in a single centralized Web page. You can use Web Clipping to consolidate content from Web sites scattered throughout a large organization.

This chapter contains the following sections:

- [What Is Web Clipping?](#)
- [Adding a Web Clipping Portlet to a Page](#)
- [Integrating Authenticated Web Content Using Single Sign-On](#)
- [Adding a Web Clipping That Users Can Personalize](#)
- [Migrating from URL-Based Portlets](#)
- [Current Limitations for Web Clipping](#)

5.1 What Is Web Clipping?

Web Clipping allows clipping of an entire Web page or a portion of it and reusing it as a portlet. Basic and HTML-form-based sites may be clipped. Use Web Clipping when you want to copy content from an existing Web page and expose it in your portal as a portlet. The Web Clipping portlet supports:

- **Navigation through various styles of login mechanisms**, including form- and JavaScript-based submission and HTTP Basic and Digest Authentication with cookie-based session management.
- **Fuzzy matching of clippings**, meaning that if a Web clipping gets reordered within the source page or if its character font, size, or style changes, it will still be identified correctly by the Web Clipping engine and delivered as the portlet content.
- **Reuse of a wide range of Web content**, including basic support of pages written with HTML 4.0.1, JavaScript, applets, and plug-in enabled content, retrieved through HTTP GET and POST (form submission).

- **Personalization**, enabling page designers to expose input parameters that page viewers can modify when they personalize the portlet. These parameters can be exposed as public parameters that a page designer can map as OracleAS Portal page parameters. This feature enables end users to obtain personalized clippings.
- **Integrated authenticated Web content through Single Sign-On**, including integration with external applications, which enables you to leverage Oracle Application Server Single Sign-On and to clip content from authenticated external Web sites.
- **Inline rendering**, enabling you to set up Web Clipping portlets to display links within the context of the portlet. As a result, when a user clicks a link in the Web Clipping portlet, the results display within the same portlet. You can use this feature with internal and external Web sites.
- **Proxy authentication**, including support for global proxy authentication and per-user authentication. You can specify proxy server authentication details including type (Basic or Digest) and realm, through the Web Clipping Provider Test page. In addition, you can specify one of the following schemes for entering user credentials.
 - All users automatically log in using a user name and password you provide.
 - All users will need to log in using a user name and password they provide.
 - All public users (not authenticated into Portal) automatically log in using a user name and password you provide, while valid users (authenticated into Portal) will need to log in using a user name and password they provide.

See the *Oracle Application Server Portal Configuration Guide* for more information.

- **Migration from URL-based portlets**, enabling you to migrate your URL-based portlets to Web Clipping. See [Section 5.5, "Migrating from URL-Based Portlets"](#) for more information.
- **Navigation and clipping of HTTPS-based external Web sites**, provided that appropriate server certificates are acquired.
- **Clipping of page content from HTML 4.0.1 pages**, including:
 - Clipping of <applet>, <body>, <div>, <embed>, , <object>, , , <table>, and tagged content
 - Preservation of <head> styles and fonts, and Cascading Style Sheets (CSS)
 - UTF-8 compliant character sets
 - Navigation through hyperlinks (HTTP GET), form submissions (HTTP POST), frames, and URL redirection
- **National Language Sets (NLS)** in URLs and URL parameters. See [Section 5.6, "Current Limitations for Web Clipping"](#) for information about how Web Clipping determines the character set of clipped content.

By default, all Web clipping definitions are stored persistently in the Oracle Application Server infrastructure database. Any secure information, such as passwords, are stored in encrypted form, according to the Data Encryption Standard (DES), using Oracle encryption technology.

5.2 Adding Web Page Content to a Portal Page

To add Web page content to a portal page, follow the steps described in the following sections:

1. [Section 5.2.1, "Adding a Web Clipping Portlet to a Page"](#)
2. [Section 5.2.2, "Selecting a Section of a Web Page to Display in the Web Clipping Portlet"](#)
3. [Section 5.2.3, "Setting Web Clipping Portlet Properties"](#)

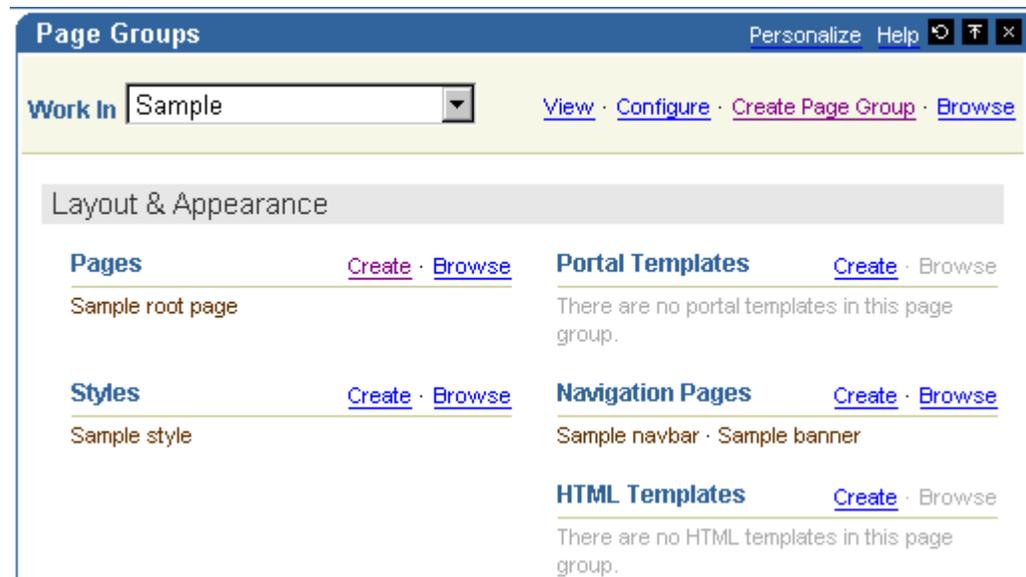
5.2.1 Adding a Web Clipping Portlet to a Page

To add a Web Clipping portlet to an OracleAS Portal page:

1. Navigate to the Page Groups portlet. By default, the Page Groups portlet is located on the **Build** tab of the Portal Builder page.
2. In the **Layout & Appearance** section, for **Pages**, click **Browse**.

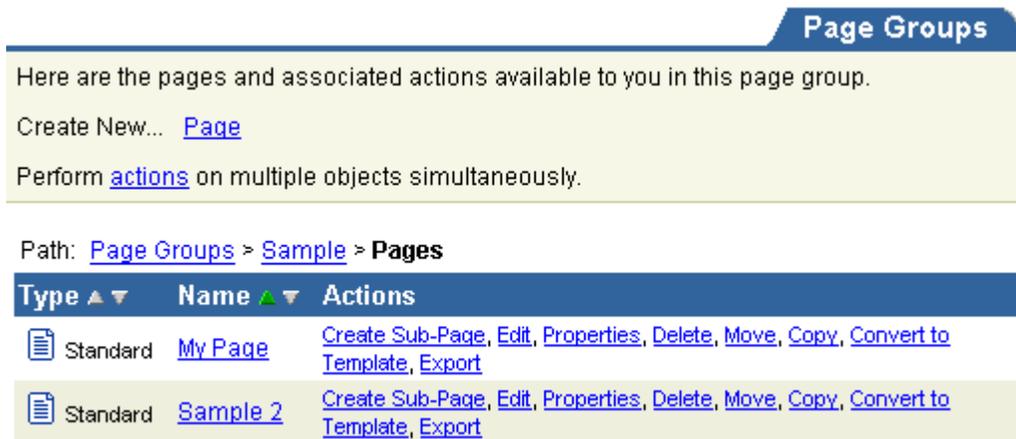
[Figure 5–1](#) shows the Page Groups portlet.

Figure 5–1 Viewing the Page Group



3. [Figure 5–2](#) shows the Page Groups tab with the list of pages. For the page to which you want to add the Web Clipping portlet, click **Edit** in the **Actions** column.

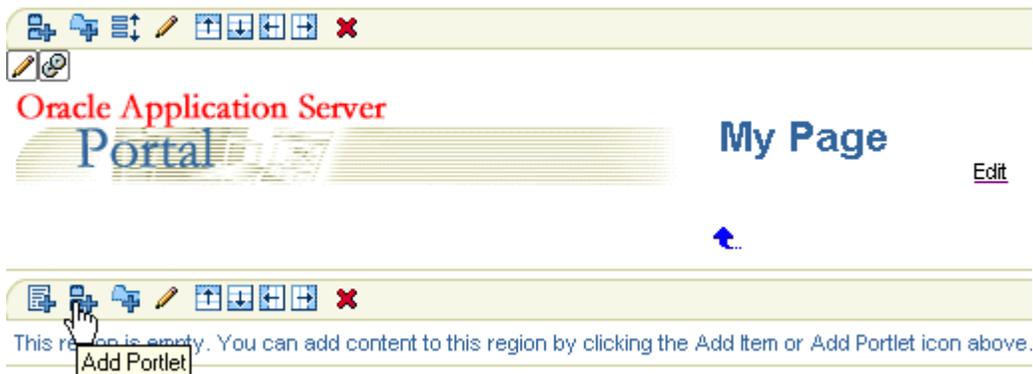
Figure 5–2 Selecting a Page



- The page is displayed. In the region in which you want to add the Web Clipping portlet, click the **Add Portlet** icon.

Figure 5–3 shows a portion of the page.

Figure 5–3 Adding a Portlet to a Page



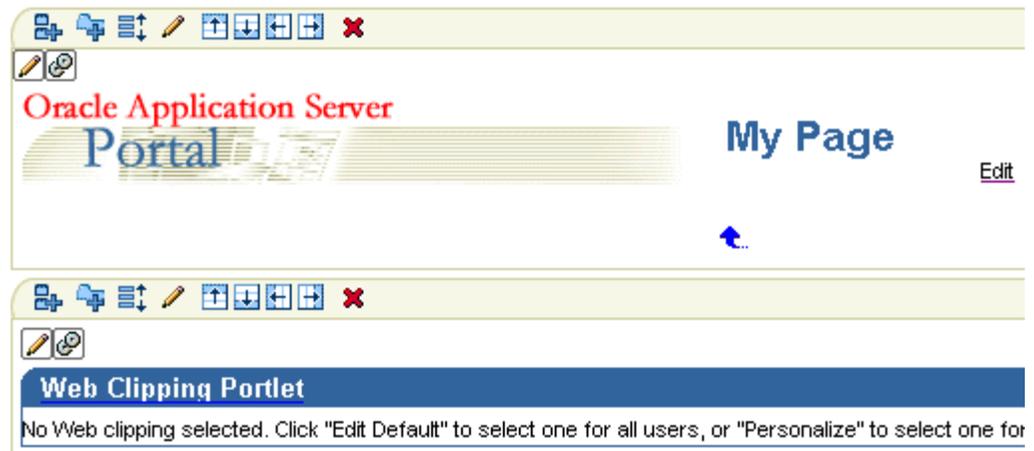
- In the Add Portlets page, navigate to the **Web Clipping Portlet** link and click it. The **Web Clipping Portlet** moves to the **Selected Portlets** box.

By default, the Web Clipping portlet is located in the Portal Builder page of the Portlet Repository. If you cannot find this page, use the **Search** field to find the portlet.

- Click **OK** to add a Web Clipping portlet to your page.

Figure 5–4 shows the Web Clipping portlet added to your page.

Figure 5-4 Web Clipping Portlet Added to a Page



5.2.2 Selecting a Section of a Web Page to Display in the Web Clipping Portlet

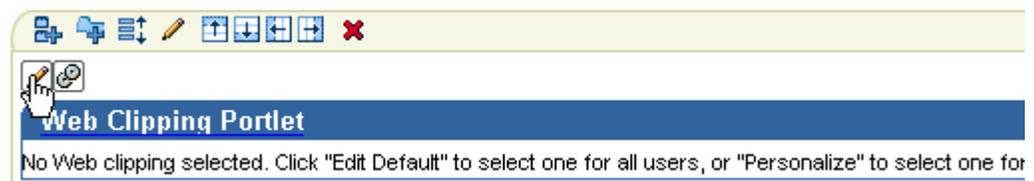
To select a section of a Web page to display in the Web Clipping portlet, you use the Web Clipping Studio. Using the Web Clipping Studio, you can:

- Browse for Web content
- Section the chosen target page
- Choose the exact portion of the Web content to clip
- Preview the clipped content as a portlet
- Save the clipped content as a portlet
- Set portlet properties and save the updated portlet information

To select a section of a Web page to display in the Web Clipping portlet:

1. Above the Web Clipping portlet, click the **Edit Defaults** icon, as shown in Figure 5-5.

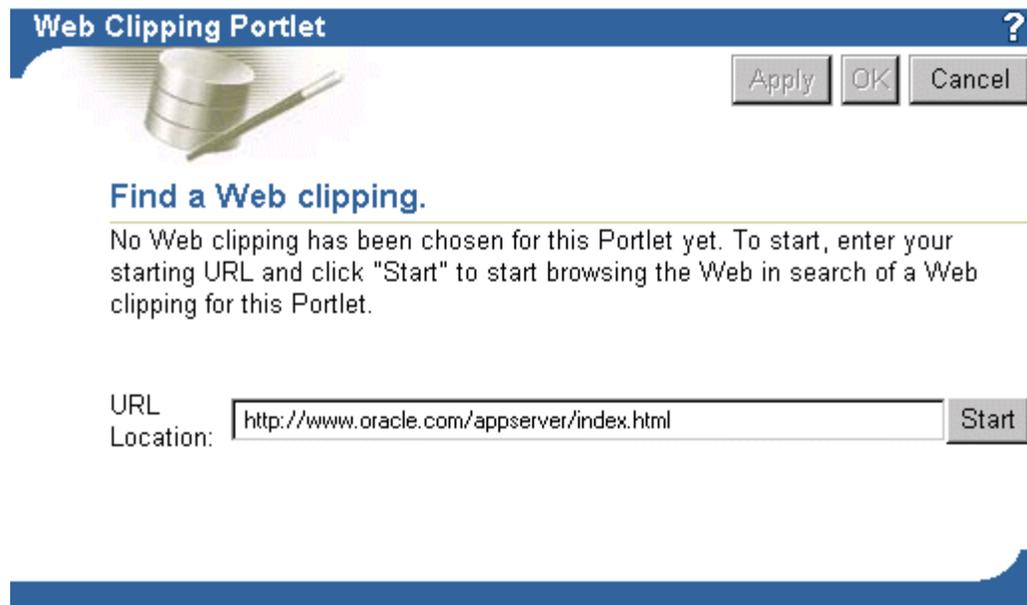
Figure 5-5 Editing Default Settings



The Find a Web Clipping page is displayed.

2. In the **URL Location** field, enter the location of the starting Web page that links to the content you want to clip, as shown in Figure 5-6.

Figure 5–6 Specifying a URL



3. Click **Start**.

The Web Clipping Studio displays the page you specified, as shown in Figure 5–7.

Figure 5–7 Browsing to a Page Containing Content for a Web Clipping



Note that the URL in the browser bar changes from:

`http://host:port/portal/page?_dad=portal&_schema=PORTAL...`

To:

`http://host:port/portalTools/webClipping...`

4. Browse to the page that contains the content you want to clip.

As you click hyperlinks in the Web page, your navigation links are recorded.

Note: Any browsing operations that do not contribute to the eventual Web clipping will be discarded. Only the significant browsing operations are recorded for later playback during the show mode; any discarded links are not visited.

For any Web sites that require HTTP Basic or Digest Authentication, a form is displayed that requests user name and password information. This encoded authentication information is recorded as part of the browsing information.

- Once you display the page that contains the content you want to clip, in the Web Clipping Studio banner, click **Section**, as shown in [Figure 5-8](#).

Figure 5-8 Sectioning the Target Web Page



Sectioning divides the target Web page into its clippable sections, as shown in [Figure 5-9](#). After you click **Section**, you are no longer able to browse links in the displayed page. If you want to continue navigation, click **Unsection** in the Web Clipping Studio banner.

Figure 5-9 Sectioned Target Web Page



- At the top left of the section of the Web content you want to clip, click **Choose**. You can choose only one section as a clipping at a time.

Note: To increase the number of sections available from which to choose, click **Section Smaller** in the Web Clipping Studio banner. For example, you would click **Section Smaller** to drill down one level of nested tables. To decrease the number of sections available from which to choose, click **Section Larger**.

7. Web Clipping Studio displays a preview of your chosen section. If it is the section you want, click **Select** in the Web Clipping Studio banner. The Web Clipping Studio displays the Find a Web Clipping page, with the properties of the clipping. If you do not want to use the section you clipped in your portlet, click **Unselect** to return to the page containing the section. You can choose another section on the page, or click **Unsection** to navigate to another page. Some sections may contain no data, only whitespace. For example, a Web page may contain an HTML <DIV> tag that contains no text or images. If you click **Choose** on a section that contains no data, Web Clipping displays a preview, but the preview correctly shows only whitespace. In this case, click **Unselect** in the preview page to return to the sectioned page. Then, select a section containing data.
8. In the Find a Web Clipping page, click **OK** to display the selected Web clipping in the Web Clipping portlet on your page. (You can edit default properties in the page. See [Section 5.2.3, "Setting Web Clipping Portlet Properties"](#) for more information.)

Figure 5–10 shows the content added to the Web Clipping portlet.

Figure 5–10 Clipped Content Added to the Web Clipping Portlet on a Portal Page



Note that the **Refresh** link in the Web Clipping Portlet retrieves fresh data from the originating Web site. The **Portlet Refresh** link reloads the portlet, but it may retrieve the data from the cache, depending upon the settings for expiration.

5.2.3 Setting Web Clipping Portlet Properties

You can edit various portlet settings to change the appearance of the Web Clipping portlet and to specify how end users can interact with the portlet.

To set Web Clipping portlet properties:

1. At the top left of the Web Clipping portlet, click the **Edit Defaults** icon. Web Clipping Studio displays the Find a Web Clipping page with a Properties section, as shown in [Figure 5–11](#).

Figure 5–11 Properties Section of Find a Web Clipping Page

Properties

You can set some properties of the Web clipping.

URL Rewriting:	<input type="text" value="None"/>	
Title:	<input type="text" value="Oracle Application Server"/>	
Description:	<input type="text" value="New Desc"/>	
Time Out	<input type="text" value="60"/>	Please choose a value in range[1, 60].
Expires (minutes):	<input type="text" value="30"/>	

2. From the **URL Rewriting** list in the **Properties** section, choose **Inline** if you want link targets to be displayed inside the portlet, or choose **None** if you want link targets to replace the current Portal page in the browser.
3. In the **Title** field, enter a title to display in the portlet banner.
4. In the **Description** field, enter a description of the portlet.
5. In the **Time Out (seconds)** field, enter the amount of time (in seconds) for the Web Clipping provider to attempt to contact the Web page from which the content was clipped.
6. In the **Expires (minutes)** field, enter the amount of time (in minutes) that cached content is valid. Any requests for portlet content that occur within the time period you specify will be satisfied from the cache.

Once the cache period is exceeded, requests for portlet content will be satisfied by retrieving content from the portlet's Web Clipping data source. The cache will also be refreshed with this content.

7. If you entered any information in a form while clipping content for the Web Clipping portlet, the **Parameterize Inputs** section is available. Select the **Click to start parameterizing** check box to customize parameters associated with the Web Clipping portlet content. Then:
 - a. From the **Parameters** list, choose the parameters that you want to customize.
 - b. From the **Personalizable** list, select a parameter if you want to allow end users to provide their own values for the parameters when they personalize the portlet. Select **None** if you do not want to allow this.
 - c. In the **Display Name** field, enter a name to be displayed for the parameter.
 - d. In the **Default Value** field, enter a value to use by default for the parameter.

[Section 5.4.3, "Personalizing a Web Clipping Portlet"](#) provides an example of personalizing parameters.
8. Click **OK**.

5.3 Integrating Authenticated Web Content Using Single Sign-On

This section walks you through an example that demonstrates how you can leverage OracleAS Single Sign-On to integrate content from external Web sites that require authentication into a Web Clipping portlet.

The example incorporates a secured page from Oracle MetaLink (an external application) into a Web Clipping portlet.

To integrate an external application:

1. Set up the external application in OracleAS Portal, specifying the authentication information. Refer to the *Oracle Application Server Portal Configuration Guide* for more detail.
 - a. Log in to OracleAS Portal as a user who has SSO Administration privileges, for example, the orcladmin user.
 - b. Navigate to the Administer External Applications portlet. (Click the **Administer** tab, then click the **Portal** subtab. In the **SSO Server Administration** section, which is in the middle column, select **Administer External Applications**.)
 - c. Click **Add External Application**.
 - d. In the Create External Application page, in the **Application Name** field, enter a name for the application, for example, *Metalink*.
 - e. For **Login URL**, enter the URL to log into the application, for example, `http://metalink.oracle.com/metalink/plsql/sit_main.showSitemap?p_showTitle=0`. To determine the URL, navigate to the desired application in a browser and note the URL.

For Form-based Authorization, view the source of the login page for the external application and note the URL to be accessed during the login action.
 - f. For **User Name/ID Field Name**, enter the field name that the external application uses for the user name. Determine the field name by viewing the source for the desired page. If the Authentication method uses Basic Authentication, you do not need to enter a field name. For Metalink, you do not need to enter anything in this field.
 - g. For **Password Field Name**, enter the field name that the external application uses for the password. Determine the field name by viewing the source for the desired page. If the Authentication method uses Basic Authentication, you do not need to enter a field name. For Metalink, you do not need to enter anything in this field.
 - h. Select **Basic Authentication** as the authentication method.

[Figure 5-12](#) shows a portion of the Create External Application page:

Figure 5–12 Creating an External Application

Create External Application ?

Apply OK Cancel

External Application Login

Enter the application name, the login URL, and the user name and password HTML field names used by the application's login form. The login URL is typically the submit action of the application's login form. It will be used in conjunction with the user name and password field names to perform a single sign-on login into this application. The login URL as well as the user name and password field names should be determined by inspecting the source of the application's standard login form. User name/id, password, additional field etc. values are not required for Basic authentication and Login URL should be a url which requires authentication.

Application Name:

Login URL:

User Name/ID Field Name:

Password Field Name:

Authentication Method

Select the authentication method used by this application. The POST method submits the credentials with the body of the form. The GET method submits the login credentials as part of the login URL.

Type of Authentication Used:

- i. In the **Additional Fields** section, you can enter names and values of any additional fields that are submitted with the login form of the external application. To specify a field name that is used to indicate a redirection URL, enter `redirectFieldName` for **Field Name**. For this example, you do not need to enter additional fields. [Figure 5–13](#) shows the Additional Fields section.

Figure 5–13 Specifying Redirection

Additional Fields

Type the names and values of any additional fields that are submitted with the login form of the external application.

Field Name	Field Value	Display to User
<input type="text" value="redirectFieldName"/>	<input type="text" value="p_requested_url"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

Apply OK Cancel

- j. Click **OK**.
- k. To test your credentials with Oracle Metalink, in the Administer External Applications page, click the name of the application you just created. Then, in the External Application Login page, log into the application Oracle Metalink using your Oracle Metalink user name and password.

In the Administer External Applications page, click **Close**.

For more information about OracleAS Single Sign-On and external applications, see the *Oracle Application Server Single Sign-On Administrator's Guide*.

2. For the Web Clipping portlet, create a new Web Clipping provider:
 - a. Click the **Administer** tab, then click the **Portlets** tab.
 - b. Select **Register a Provider**.
 - c. In the Register a Provider page, enter `webClippingMetalink` for the **Name** and `webClipping Metalink` for the **Display Name**. Enter values for Timeout and Timeout Message. Choose **Web** for the **Implementation Style**.
 - d. Click **Next**.
 - e. In the **General Properties** section of the Define Connection page, for the **URL**, enter:


```
http://host:port/portalTools/webClipping/providers/webClipping
```

Note that `host:port` refers to the host and port where the providers are located. This corresponds to the URL for OracleAS Portal.
 - f. For the user's identity, select **The user's identity needs to be mapped to a different name in the Web provider's application, and/or the Web provider requires an external application login for establishment of a browser session. If selecting this option, specify the external application ID below**.
 - g. For **External Application ID**, click the **List of Values** icon and select the external application you added.

Figure 5–14 shows the top part of the Define Connections page.

Figure 5–14 Specifying an External Application for a Web Clipping Provider

Define Connection ?

< Previous Next > Finish Cancel

Step 2 of 3 ▶▶▶

General Properties

Specify the URL for the Web provider and configure its communication settings.

URL:

Web provider in same cookie domain as the portal

Enter the Service Id, if applicable. Multiple providers can now be accessed via the same URL. The Service Id identifies a specific provider that can be accessed via the specified URL.

Service Id:

(example: "urn:ADAPTER_PROVIDER" or "urn:webProvider")

Specify how the user's identity will be set by the Portal when communicating with the Web provider.

The user has the same identity in the Web providers application as in the Single Sign-On identity.

The user's identity needs to be mapped to a different name in the Web provider's application, and/or the Web provider requires an external application login for establishment of a browser session. If selecting this option, specify the external application ID below.

External Application ID: 📖

- h. In the **User/Session Information** section, select **User** to send user specific information to the provider. For **Login Frequency**, select **Once Per User Session**.

- i. Check that the proxy settings are correct. If you use a proxy server to contact the Web providers from the middle tier, enter the proxy server for **Middle Tier**.

If you use a proxy server to contact the Web providers from the portal repository, enter the proxy server for **Portal Repository**.

Usually, because the OracleAS Portal and Web Clipping URLs point to the same middle tier, this step is not necessary.

- j. Click **Finish**.
 - k. In the Registration Confirmation page, if the registration was successful, click **OK**.
3. Add a portlet to a page, using the Web Clipping Metalink provider that you just created:
 - a. In OracleAS Portal, navigate to the page in which you want to add the portlet.
 - b. In the region in which you want to add the Web Clipping portlet, click the **Add Portlet** icon.
 - c. In the Add Portlets to Region page, search for **Web Clipping Metalink**. It is located in the Portlet Staging Area. Click it to move it to the **Selected Portlets** box.
 - d. Click **OK**.

[Section 5.2.1, "Adding a Web Clipping Portlet to a Page"](#) describes in detail how to add a portlet.

4. If you have not entered your credentials for the External Application representing Metalink, the portlet will contain an **Update login information** link. Click the link and enter your credentials. Then, click **OK**.
5. Select a section of a page to display in the Web Clipping portlet:
 - a. In the Web Clipping portlet, click the **Edit Defaults** icon.
The Find a Web Clipping page is displayed.
 - b. In the **URL Location** field, the default URL for the External Application is displayed. Change it to the location of the starting Web page that links to the content you want to clip. In this case, enter
`http://www.metalink.oracle.com`.
 - c. Click **Start**. The Web Clipping Studio displays the page you specified. Log into Oracle Metalink.
 - d. Browse to the page that contains the content you want to clip. After you display the page that contains the content you want to clip, click **Section** in the Web Clipping Studio banner. [Figure 5–15](#) shows the external application displayed in Web Clipping Studio.

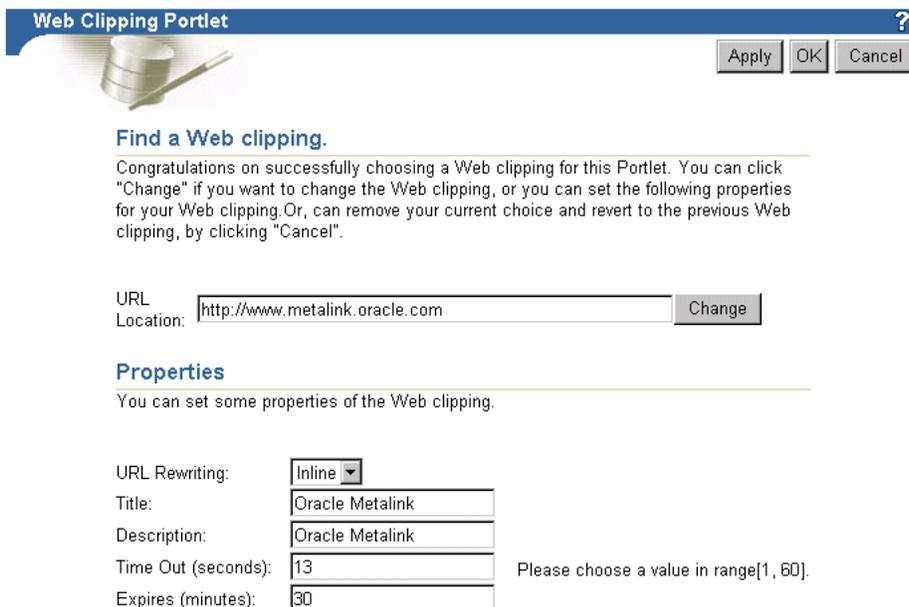
Figure 5–15 External Application in Web Clipping Studio



- e. At the top left of the section of the Web content you want to clip, click **Choose**.
- f. Web Clipping Studio displays a preview of your chosen section. If it is the section you want, click **Select** in the Web Clipping Studio banner.

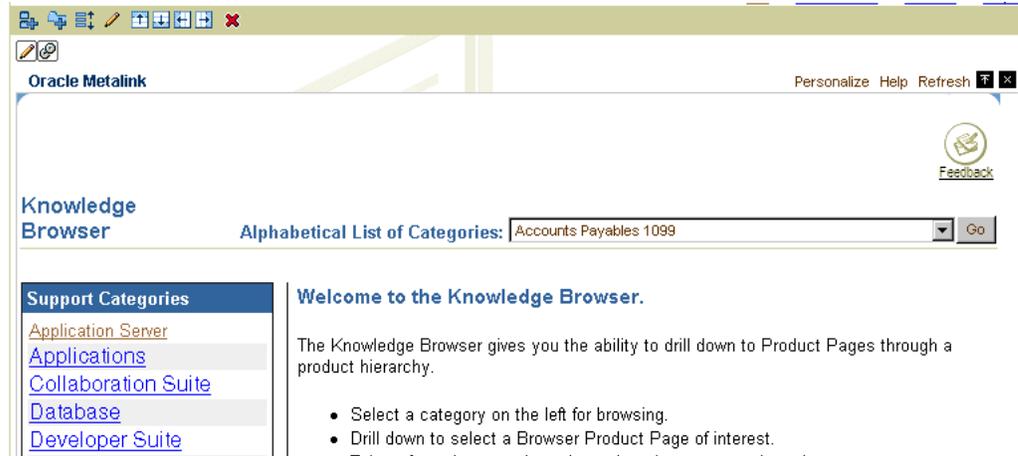
The Web Clipping Studio displays the Find a Web Clipping page, with the properties of the clipping, as shown in [Figure 5–16](#).

Figure 5–16 Properties of the External Application



- g. In the Find a Web Clipping page, from the **URL Rewriting** list, choose **Inline** to specify that you want link targets displayed inside the portlet, rather than in a new browser window. **OK** to display the selected Web clipping in the Web Clipping portlet on your page, as shown in [Figure 5–17](#).

Figure 5–17 External Application Displayed in Portlet



Now, the Web clipping, even though it is from a page requiring authentication, is available in your portlet.

Note that you can associate only one external application with a provider. For each external application, you must register a new provider. Each portal user accesses the authenticated content using their user name and password for that system, not the page designer's credentials.

5.4 Adding a Web Clipping That Users Can Personalize

This section walks you through an example that demonstrates how you can enable end users to personalize their own view of the content in a Web Clipping portlet.

In the example, you perform the following tasks:

- [Adding a Web Clipping Portlet to a Personal Page](#)
- [Selecting a Clipping in OTN](#)
- [Personalizing a Web Clipping Portlet](#)

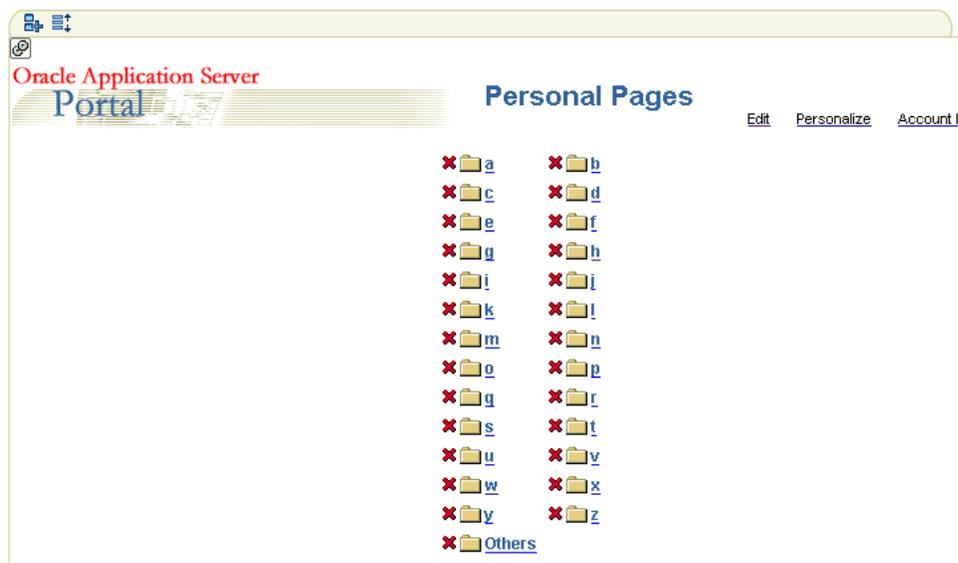
5.4.1 Adding a Web Clipping Portlet to a Personal Page

Administrators can set up personal pages for all users. This task assumes that the administrator has enabled this functionality. In this task, you add the Web Clipping portlet to your personal page.

1. In the **Work In** field of the Page Groups portlet, select the page group that contains personal pages.

By default the Page Groups portlet is located on the Build tab of the Portal Builder page.

2. In the **Pages** section, select Personal Pages. Expand the node for the first letter of your user name. [Figure 5–18](#) shows the Personal Pages.

Figure 5–18 Expanding Page Group Map Nodes

3. Click your user name. Your personal page is displayed.
4. In any portlet region, click the **Add Portlets** icon.
5. In the Add Portlets page, click the **Web Clipping Portlet** link.

By default, the Web Clipping portlet is located in the Portal Builder page of the Portlet Repository. If you cannot find this page, use the **Search** field to find the portlet.

6. The Web Clipping portlet is added to the Selected Portlets list. Click **OK**.

5.4.2 Selecting a Clipping in OTN

In this task, you navigate to the Oracle Technology Network (OTN) and search for specific information, then select the results as the clipping for your portlet.

1. In the Web Clipping portlet, click the **Edit Defaults** icon.
2. In the Web Clipping Studio's Find a Web Clipping page, in the **URL Location** field, enter:

<http://www.oracle.com/technology/products/ias/portal/index.html>

Click **Start**. OTN displays the Portal Center page.

3. Enter a search string in the **Search** field at the top of the page. For this example, enter "web clipping portlet" (including the quotation marks), then click **Search**.

The Search result is displayed in the Web Clipping Studio, as shown in [Figure 5–19](#).

Figure 5–19 Searching for Information on OTN

The screenshot shows the Oracle OTN website header with navigation links: BUY, DOWNLOAD, SUPPORT, EVENTS, CONTACT US, and a SELECT COUNTRY dropdown. The search results are for 'web clipping portlet' and include the following items:

- MIGRATING_URLSERVICES_TO_WEBCLIPPING:** http://www.oracle.com/technology/products/ias/portal/html/migrating_urlservices_to_webclipping.html
- Migrating URL-based Portlets to Web Clipping Portlets:** Oracle Application Server Portal Developer Kit (PDK) Portal Tools: Migrating F URL-based Portlets to Web Clippings... (published 12/19/2003) http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/articles/migrating_urlservices_to_webclipping.htm
- How to Build a URL-Based SSL Portlet:** Oracle Application Server Portal Developer Kit How to Build a URL-Based SSL Portlet Creator November 13, 2003... (published 12/19/2003) <http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/JPDKV2/DOC/URLSSL/HOW.TO.BUILD.URLBASED.SSL.POF>
- How to Build a URL-Based Portlet:** Oracle9iAS Portal Developer Kit (PDK)How to Build a URL-Based Portlet Last Updated: April 15, 2003... (published 12/19/2003) <http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/ARTICLES/HOW.TO.BUILD.URLBASED.PORTLET.V2.html>

4. Click **Section**. Web Clipping Studio divides the target Web page into its clippable sections, as shown in Figure 5–20.

Figure 5–20 Sectioning the Target Web Page

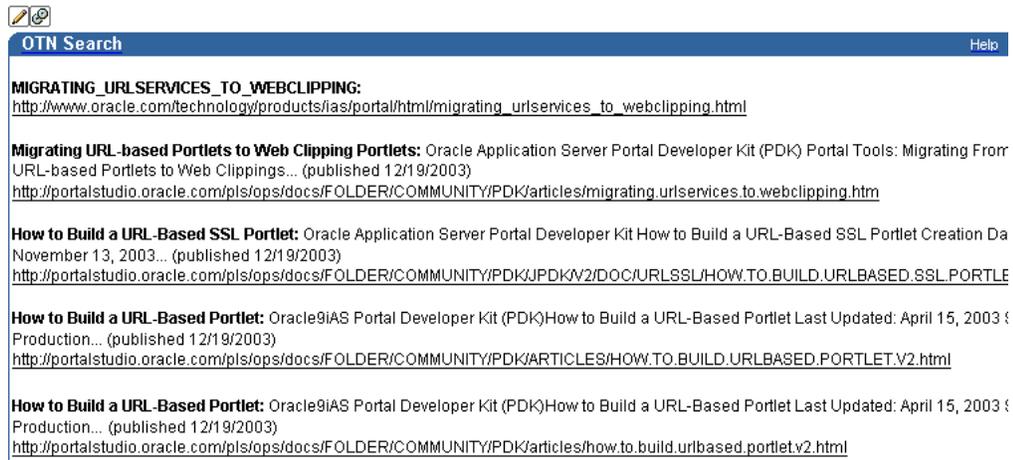
The screenshot shows the Web Clipping Studio interface. The search results from Figure 5–19 are displayed within a frame. Each search result item has a 'Choose' button in its top-left corner, indicating that the page has been sectioned into clippable units.

5. At the top left corner of the search result, click **Choose**.

A preview of the search result section displays.

Some sections may contain no data, only whitespace. For example, a Web page may contain an HTML <DIV> tag that contains no text or images. If you click **Choose** on a section that contains no data, Web Clipping displays a preview, but the preview correctly shows only whitespace. In this case, click **Unselect** in the preview page to return to the sectioned page. Then, select a section containing data.

6. Click **Select** to confirm that the search result section is the one you want to clip.
7. In the Find a Web Clipping page, click **OK** to display the selected Web Clipping in the Web Clipping portlet on your page. Figure 5–21 shows the Web Clipping displayed in the page.

Figure 5–21 Selected Web Clipping Displayed in Web Clipping Portlet

5.4.3 Personalizing a Web Clipping Portlet

In this task, you edit the properties of the Web Clipping portlet to allow end users to display different search results in the portlet:

1. Above the Web Clipping portlet you just added, click the **Edit Defaults** icon, as shown in [Figure 5–22](#).

Figure 5–22 Clicking Edit Defaults for the Web Clipping Portlet

2. In the Find a Web Clipping page, modify the following items in the **Properties** section:
 - From the **URL Rewriting** list, choose **Inline** to specify that you want link targets displayed inside the portlet, rather than in a new browser window.
 - In the **Title** field, enter **OTN Search**. This title displays in the header of your Web Clipping portlet, as well as the pages where users can personalize parameters for the Web clipping.

[Figure 5–23](#) shows the **Properties** and **Parameterize Inputs** sections of the Find a Web Clipping page.

Figure 5–23 Setting Properties for a Web Clipping**Properties**

You can set some properties of the Web clipping.

URL Rewriting:	<input type="text" value="inline"/>	
Title:	<input type="text" value="OTN Search"/>	
Description:	<input type="text" value="New Desc"/>	
Time Out (seconds):	<input type="text" value="34"/>	Please choose a value in range[1, 60].
Expires (minutes):	<input type="text" value="30"/>	

Parameterize Inputs

The Web clipping can be made parameterizable. Click the check box to start choosing which parameters of which URLs you have visited in the studio, to be parameterizable, so that page viewers can personalize their own views of this Web clipping. You can also fill in some default values for these parameters.

Click to start parameterizing.:

- Because the content displayed in the portlet was reached by entering information in the **Search** field on OTN, you can customize the parameters used by the search to allow end users to specify their own search string.

In the **Parameterize Inputs** section, select the **Click to start parameterizing** check box.

- In the parameters table, make the following changes:
 - In the **Parameters** column, choose **p_Query** from the list.
 - In the **Personalizable** column, choose **Param1** from the list. You can manually add more parameters in the provider.xml file if you need to.
 - In the **Display Name** column, enter **OTN Search**.
 - Make sure that **Default Value** displays **"web clipping portlet"** to be sure you have selected the right parameter.

Figure 5–24 shows the parameters table.

Figure 5–24 Specifying Parameters for User Input

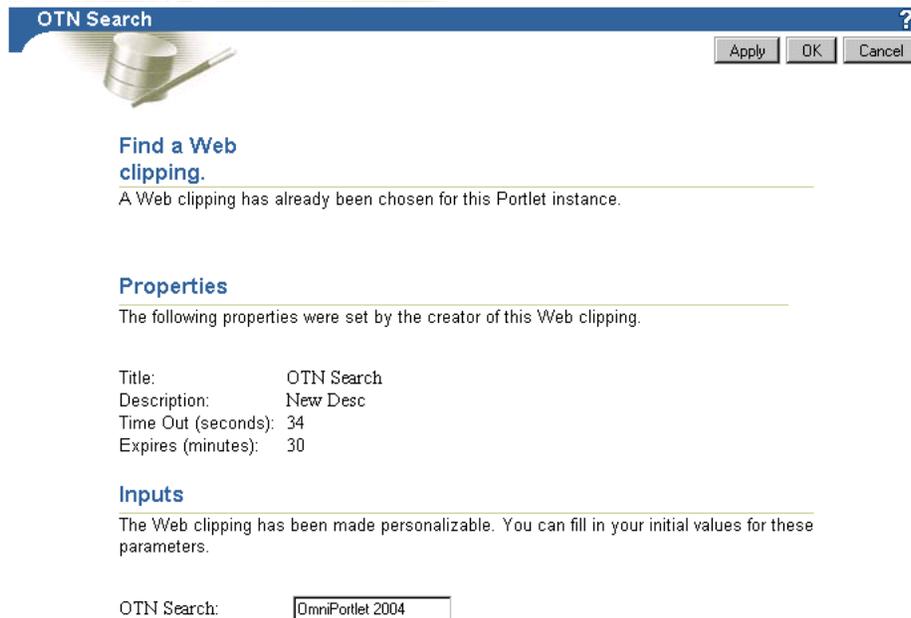
Click to start parameterizing.:

Index	URL	Parameters	Personalizable	Display Name	Default Value
0	http://www.oracle.com/ultrasearch/wwws_o	<input type="text" value="p_Query"/>	<input type="text" value="Param1"/>	<input type="text" value="OTN Search"/>	<input type="text" value="web clipping j"/>

- Click **OK** to display the default search results in the Web Clipping portlet on your page.
- In the Editing Views section, click **View Page**.
- In the Web Clipping portlet header, click **Personalize**, as shown in Figure 5–25.

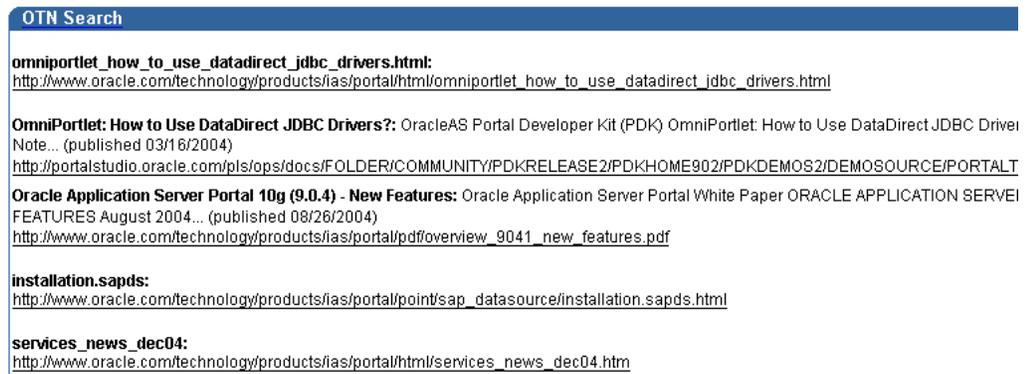
Figure 5–25 Clicking Personalize in the Web Clipping Portlet Header

- In the page that displays, scroll down to the **Inputs** section. Notice that the parameter field for the search string is labeled **OTN Search**, as you specified for the Display Name for this parameter. In the **OTN Search** field, enter a different search string. For example, enter **OmniPortlet 2004**, as shown in Figure 5–26.

Figure 5–26 Specifying Input for Parameters

9. Click **OK**.

The Web Clipping portlet now displays the results of performing a search on OTN for OmniPortlet 2004 information, as shown in [Figure 5–27](#).

Figure 5–27 New Web Clipping Result Based on Customer Input Parameter

5.5 Migrating from URL-Based Portlets

You can migrate URL-based portlets that are stored in a `provider.xml` file to Web Clipping portlets. These Web Clipping portlets will exist in the Web Clipping Repository, but you can access the portlets through pointers defined in the `provider.xml` file.

Note that, during the migration process, no modifications will be done on the original files used by these URL-based portlets.

The following sections describe:

- [Preparing for Migration](#)
- [Performing the Migration](#)

- [Post-Migration Configuration](#)
- [Maintaining Migrated Portlets](#)
- [Limitations in Migrating URL-Based Portlets](#)

5.5.1 Preparing for Migration

Before you begin the migration, take the following steps:

1. Verify that the Web provider that contains the URL-based portlets you want to migrate is functional. The migration process will not succeed with non-functional URL-based portlets. To verify, make sure that the URL-based portlets are used by your Portal pages and that they appear correctly.
2. Find existing URL-based portlets.

Before you run the migration tool, make sure that you know the file path to the service deployment properties file, which holds pointers to everything about the service, including the path to the provider.xml file that holds the URL services definitions.

You must run the migration tool once for each service. If you have multiple services, find the entire list of service deployment properties files that will be used during migration.

The location of these service deployment properties files may vary depending on individual deployment scenarios. Typically, with JPDK samples, they are located in:

```
$INSTALL_HOME/j2ee/home/applications/jpdk/jpdk/WEB-INF/deployment
```

JPDK samples that are shipped with the OracleAS Portal are located in the same directory path.

The list of sample service deployment properties files include:

- urlbasicauth.properties
- urlexternalauth.properties
- urlnls.properties
- urlparams.properties
- urlsample.properties
- urlssl.properties

In the migration process, the service deployment properties file as well as the provider.xml file used to contain old URL-based portlets will be copied and imported into the Web Clipping application, together with all the previous customizations based on the File Preference store. Because no modifications will be done on the original files used by these URL-based portlets, you do not need to back up any of these files. They can continue to be used as URL-based portlets.

3. Depending on the types of URL-based portlets you have, you may need to rearrange them:
 - Because Web Clipping does not offer parallel functionality for the XML Filter capability that URL-based portlets offer, isolate all of the URL-based portlets that use the XML Filter into a separate service deployment (and provider.xml file) that will not be migrated.

- Because you may face limitations when migrating URL-based portlets that use external applications, you may decide that the migration is too costly for that subset of your URL-based portlets. In this case, you can isolate them into a separate service deployment (and `provider.xml` file) that will not be migrated.
4. Make sure that the machine where you are planning to run the migration tool has local access to the service deployment files and files that the deployment files point to, for both the URL-based portlets provider and the Web Clipping provider.
 5. Make sure that both the Web Clipping Repository and the HTTP Proxy are configured, and that the proxy settings concur with those used by your deployment of URL-based portlets. If you have a proxy server that requires authentication, the Web Clipping provider must be configured with **Requires Authentication** enabled. Set the Login scheme to use a global log in (**Use Login below for all users**).

Check the Web Clipping Provider Test page at:

```
http://host:port/portalTools/webClipping/providers/webClipping
```

See the *Oracle Application Server Portal Configuration Guide* for more information about setting proxy authentication.

6. Shut down the OC4J instance where your Portal Tools application is running. This step ensures that no modifications are made to the files that will be migrated. Do not restart the OC4J instance until after the migration is completed.

To shut down the OC4J instance in an Oracle Application Server instance, use the following command (from the `oracle_home/opmn/bin` directory):

```
opmnctl stopproc gid="OC4J_Instance"
```

In this example, `OC4J_Instance` refers to the OC4J instance where your Portal Tools application was deployed. Typically, it is `OC4J_Portal`.

To shut down a standalone OC4J instance, change to the `OC4J_HOME/j2ee/home` directory, then use the following command:

```
java -jar admin.jar ormi://host:port/ admin admin_password -shutdown
```

5.5.2 Performing the Migration

The migration tool parses the service deployment properties file to find the `provider.xml` file that contains the XML definition of the URL-based portlets to be migrated.

The tool changes the Provider Definition class from `URLProviderDefinition` to `WcProviderDefinition`. For each of the URL-based portlets defined in the `provider.xml` file, an equivalent clipping definition is created and inserted into the Web Clipping Repository. Then, the `PortletDefinition` XML snippet corresponding to the portlet being migrated is replaced with a new one that uses `WcPortletDefinition` as its class. The replacement XML snippet contains a `Clip Id` that is a pointer to the newly inserted clipping definition.

The new `PortletDefinition` XML snippet will no longer contain the same information as it did when it was a `URLPortletDefinition`. Namely, the migration tool uses the URL to visit as well as the `headerTrimTag` and `footerTrimTag` to generate an equivalent Web Clipping definition that will be stored within the Web Clipping Repository and only accessible from the `provider.xml` file through the `Clip Id`. The only information

remaining will be the title and description. Refer to [Section 5.2.3, "Setting Web Clipping Portlet Properties"](#) for instructions on modifying your clipping.

To migrate portlets, take the following steps:

1. Set environment variables:
 - On UNIX, set `LD_LIBRARY_PATH` to either the `Install_home/lib` or `Install_home/lib32`, depending on whether the operating system is 32-bit or 64-bit.
 - On Windows, set `PATH` to `Install_home\bin`
2. Change to the `ORACLE_HOME/portal/jlib` directory.
3. Use the following command to import the portlet to Web Clipping:

```
java -Doracle.ons.oraclehome=ORACLE_HOME -jar wcwebdb.jar -import -from
urlservices webclip_depprop urlsvc_depprop
```

In the example, the parameters have the following meanings:

- `ORACLE_HOME` refers to the directory where Oracle Application Server is installed.
- `webclip_depprop` refers to the path to your webClipping service deployment properties file. The path is typically:

```
Inst_Home/j2ee/OC4J_
Instance/applications/portalTools/webClipping/WEB-INF/deployment/webClippin
g.properties
```

`Inst_Home` refers to the location where OC4J is installed. `OC4J_Instance` refers to the OC4J instance where your PortalTools application is deployed. In an Oracle Application Server instance, it is usually `OC4J_Portal`; in a standalone OC4J instance, it may be `home`.

- `urlsvc_depprop` refers to the path for the URL-based portlets service deployment properties file that points to URL-based portlets that you wish to migrate.

For example, assume your URL-based portlets are deployed in the following directory on UNIX:

```
$Inst_Home/j2ee/home/applications/jpdk/
```

Assume that Web Clipping is deployed in the following directory and that `Inst_Home` is the same directory where Oracle Application Server is installed, `ORACLE_HOME`:

```
$Inst_Home/j2ee/home/applications/portalTools/
```

In this case, use the following command:

```
cd $Inst_Home/portal/jlib;
java -Doracle.ons.oraclehome=$ORACLE_HOME -jar wcwebdb.jar -import -from
urlservices \
$Inst_
Home/j2ee/home/applications/portalTools/webClipping/WEB-INF/deployment/webClipp
ing.properties \
$Inst_
Home/j2ee/home/applications/jpdk/jpdk/WEB-INF/deployment/urlsample.properties
```

4. Repeat Step 3 for each service you want to migrate.

5.5.3 Post-Migration Configuration

After you migrate all of the URL-based portlets, take the following steps:

1. Start the OC4J instance that hosts your provider.

To start the OC4J instance in an Oracle Application Server instance, use the following command:

```
opmnctl startproc gid="OC4J_Instance"
```

In this example, *OC4J_Instance* refers to the OC4J instance where your Portal Tools application was deployed. Typically, it is *OC4J_Portal*.

To start a standalone OC4J instance, change directory to `$OC4J_HOME/j2ee/home`, then use the following command:

```
java -jar oc4j.jar -err errors.log
```

2. Update all Portal instances where URL-Based portlets were previously registered. Go to Portal Navigator to find your previously registered URL-based Portlet provider. Click **Edit Registration** and then click the **Connection** tab to edit the connection information to the newly migrated provider.

- If you previously registered your URL-based Portlet provider using the Service Id mechanism, your provider URL looked similar to the following:

```
http://host:port/jpdk/jpdk/providers
```

In this case, because the Service Id field already contains `urn:someservice`, you now need only to update the provider URL value to the following:

```
http://host:port/portalTools/webClipping/providers
```

- If you registered your URL-based Portlet provider using a provider URL that contained the Service Id, your provider URL looked similar to the following:

```
http://host:port/jpdk/jpdk/providers/service_id
```

In this case, you need to update the provider to the following:

```
http://host:port/portalTools/webClipping/providers/service_id
```

For the most part, the rest of the registration details can remain as they are. However, if you plan on using the in-line rendering functionality of the migrated portlets, you must select **Once Per User Session** for **Login Frequency**.

3. Restore HTTP proxy authentication setting that you altered in preparation for the migration. During the migration process, URL-based portlets are converted to Web Clipping portlets. If the Web Clipping provider has originally been configured with **Requires Authentication** enabled, your migrated URL-based portlets may not function properly.

Check the test page at:

```
http://host:port/portalTools/webClipping/providers/webClipping
```

If the Login Scheme is not set to **Use login below for all users**, then authentication is accomplished by mapping the current portal user to a proxy server username and password. A portal user's proxy server credentials can only be entered through the **Personalize** link of the Web Clipping portlet. However this cannot be accomplished through the **Personalize** link of the migrated URL-based portlets. The workaround is to temporarily add a Web Clipping portlet to the page and

personalize it to provide the security credentials. After this is complete, you can remove the temporary portlet.

4. Review each Portal page where you had used URL-based portlets and verify that the page still contains the content. Occasionally, you may find that, after migration, what used to be a "trimmed" Web page is now the entire Web page. This may be due to some of the limitations of the migration tool, which are discussed in [Section 5.5.5, "Limitations in Migrating URL-Based Portlets"](#). If this happens, edit the portlet by altering the Web Clipping associated with it.

5.5.4 Maintaining Migrated Portlets

After you have migrated the portlets, you no longer use the `provider.xml` file to edit the portlets. Instead, you use Web Clipping to edit the portlets, as described in [Section 5.2.3, "Setting Web Clipping Portlet Properties"](#).

Note the following:

- Whatever modifications you make to the clipping will affect it at the portlet definition level and therefore will affect all the instances of that portlet which may exist across Portal pages.
- When you modify the clipping and you have made the portlet rendering to be Inline, and have registered the provider with a Login Frequency of **Once per User Session**, then page viewers who have an instance of the particular portlet on their page, will need to log out of OracleAS Portal and log in again to see the changes implemented. This feature avoids disruption of the page viewer's usage of a particular portlet when it is being modified.
- For portlets with Web Clippings that require authentication to an external application prior to accessing the page containing the clip, the "off-line" editing mechanism detailed in the previous item does not provide such authentication information. Consequently, there is no way to modify the migrated clipping if the original URL-based portlet uses external applications. There is currently no workaround for this limitation.

5.5.5 Limitations in Migrating URL-Based Portlets

This sections describes limitations in migrating URL-based portlets to Web Clipping and describes some differences between the two methods.

- There is a fundamental difference between URL-based portlets and Web Clipping in the way that clippings are defined.

URL-based portlets use the `headerTrimTags` and `footerTrimTags` tags to define the begin and end of a particular section in an HTML page. On the other hand, Web Clippings use the HTML tag path (for example, `html/body/table[2]/tr[2]/td[1]`) to denote the path to use when looking for an HTML tag that would contain the clipping within the page.

While the header and footer trim tags for URL-based portlets offer greater flexibility (that is, the clipping does not need to reside within one single HTML tag), it is not as robust. When a clipping can no longer be found in the same location within a page, there is no way to apply fuzzy matching logic to find the clipping again. On the other hand, Web Clipping stores key pieces of information to locate the clipping within the page. If the clipping is not in the same location, the fuzzy match feature looks for other candidates on the same HTML page to account for the possibility that the clip may have moved.

- The migration tool tries to find the clipping (HTML Tag) that encapsulates the headerTrimTags and footerTrimTags. Often, this will not be the exact HTML that was extracted by the URL-based portlet. In these cases, the entire Web page will be returned as the content of the migrated Web Clipping Portlet. To amend this, simply edit the portlet.
- URL-based portlets that have been migrated to Web Clipping do not support proxy authentication by default. This is because URL-based portlets inherently do not support proxy authentication and Web Clipping preserves the edit mode of the portlets. Their edit mode does not provide an opportunity to enter authentication information. To work around this restriction, add an empty Web Clipping portlet to the same portal and use the Web Clipping portlet **Personalize** link to enter the user name and password for proxy authentication.
- URL-based portlets that used external applications are migrated as full-page Web Clipping portlets. This means that the URL previously specified by the URL-based portlet definition will be the one used to display the full page after the log in process. Whatever headerTrimTags and footerTrimTags you have previously specified will be lost, because external application integration occurs at the Portal side while the migration tool only handles the provider side. Because you are not connected to any Portal instances at the time of the migration, and the external applications framework resides only on the Portal side, the migration tool cannot fetch the authentication information necessary to log in to parse the HTML and use the headerTrimTags and footerTrimTags that you have previously specified to compute an HTML Tag Path to store in the Web Clipping Definition.

In maintaining migrated portlets, you can edit the clipping through links in the test page. However, this does not include URL-based portlets that used external applications to authenticate themselves to the external sites. There is currently no workaround for this issue.

- URL-based portlets that use the XML Filter cannot be migrated to Web Clipping portlets because there is a lack of such a functionality in the Web Clipping Portlet. Before proceeding with migration, make sure that you have backed up the URL-based portlets that use the XML Filter into a separate URL-based portlet provider. You must do this because the migration occurs at the provider level. That is, upon interpreting that a particular `provider.xml` file has `URLProviderDefinition` for its provider definition class, all the portlet definitions contained within that provider definition are migrated.

5.6 Current Limitations for Web Clipping

This section describes current limitations for Web Clipping. For information about the latest limitations in a release, be sure to read the *Oracle Application Server Release Notes*.

- If the site to which you are connecting uses a large amount of JavaScript to manipulate cookies or uses the JavaScript method `document.write` to modify the HTML document being written, you may not be able to clip content from the site.
- When you integrate with partner applications (through the use of `mod_osso`), you cannot clip directly through those partner applications in an authenticated manner. However, you can use the partner applications through the external application framework.
- You cannot use the Web Clipping portlet to clip OracleAS Portal pages. As a workaround, examine the portlet that is supplying the data and take the appropriate action:

- For database provider portlets, use export/import to copy pages across portals.
- For Web provider portlets, re-register the same provider in the destination portal and edit the portal manually.
- Note the following about Web Clipping and the use of cascading style sheets (CSS):
 - If a Web page contains more than one portlet that uses a CSS, they should not conflict if the CSS uses distinct style names, such as OraRef, to specify a style within an HTML tag, rather than using an HTML tag name, such as <A>, as the name of the style.
 - If one portlet uses a CSS, and that CSS overwrites the behavior of HTML tags by using the name of the tag, such as <A>, as the name of the style, and a second portlet on the same page does not use a CSS, the second portlet will be affected by the style instructions of the CSS of the first portlet.
 - If two portlets on the same page use a different CSS and each CSS overwrites the behavior of HTML tags by using the name of an HTML tag, such as <A>, as the name of the style, the style that will be displayed depends on the browser.
- Web Clipping checks for NLS settings in the following way:
 1. Web Clipping checks the `Content-Type` in the HTTP header for the `charset` attribute. If this is present, it assumes that this is the character encoding of the HTML page.
 2. If the `charset` attribute is not present, it checks the HTML `META` tag on the page to determine the character encoding.
 3. If the HTML `META` tag is not found, Web Clipping uses the `charset` in the previous browsed page. If this is the first page, it defaults to the ISO-8859-1 character encoding.
 4. If the value of the `charset` for `Content-Type` or `META` tag is not supported (for example, if the `charset` was specified as `NONE`), Web clipping uses the default character set, ISO-8859-1, not the `charset` in the previously browsed page.
- To use the Web Clipping portlet, you must use Netscape 7.0 or higher, or Microsoft Internet Explorer 5.5 or higher for Windows 2000, or Microsoft Internet Explorer 6.0 or higher for Windows XP.

If you use browser versions older than these, you may encounter JavaScript errors.

For troubleshooting information, see [Appendix B, "Troubleshooting Portlets and Providers"](#).

5.7 Summary

In this chapter, you learned how to use Web Clipping to add Web content to a Portal page, including adding authenticated content and personalized content to a page. In addition, you learned how to migrate URL-based portlets to Web Clipping. For more information about using Web Clipping, click the **Help** link on any of the Web Clipping pages.

Creating Java Portlets

This chapter explains how to create Java portlets based on the Java Portlet Specification (JSR 168) or the Oracle Application Server Portal Developer Kit-Java (PDK-Java) using the Portal Extension for Oracle JDeveloper. This chapter includes the following sections:

- [Guidelines for Creating Java Portlets](#)
- [Introduction to Java Portlet Specification \(JPS\) and WSRP](#)
 - [The Relationship Between WSRP and JPS](#)
- [Configuring Your Application Server to Run JPS-Compliant Portlets](#)
- [Building JPS-Compliant Portlets with Oracle JDeveloper](#)
 - [Installing the Portal Extension for Oracle JDeveloper](#)
 - [Building JPS-compliant Portlets](#)
- [Introduction to PDK-Java](#)
- [Building PDK-Java Portlets with Oracle JDeveloper](#)
 - [Installing the Portal Extension for Oracle JDeveloper](#)
 - [Building PDK-Java Portlets](#)



The source code for many of the examples referenced in this chapter is available as part of PDK-Java. You can download PDK-Java from the OracleAS Portal Developer Kit (PDK) page on OTN:

<http://www.oracle.com/technology/products/ias/portal/pdk.html>

When you unzip PDK-Java, you will find the examples in:

```
../pdk/jpdk/v2/src/oracle/portal/sample/v2/devguide
```

You can find the JavaDoc reference for PDK-Java in:

```
../pdk/jpdk/v2/apidoc
```

Note: Throughout this chapter, you will see references to ORACLE_HOME. ORACLE_HOME represents the full path of the Oracle home, and is used in cases where it is easy to determine which Oracle home is referenced. The following conventions are used in procedures where it is necessary to distinguish between the middle tier, OracleAS Infrastructure, or Oracle Application Server Metadata Repository Oracle home:

- MID_TIER_ORACLE_HOME, represents the full path of the middle-tier Oracle home.
 - INFRA_ORACLE_HOME, represents the full path of the Oracle Application Server Infrastructure Oracle home.
 - METADATA_REP_ORACLE_HOME, represents the full path of the OracleAS Infrastructure home containing the Oracle Application Server Metadata Repository.
-
-

6.1 Guidelines for Creating Java Portlets

When you write your portlets in Java for either the Java Portlet Specification (JPS) or PDK-Java, you should follow the best practices described in this section.

- [Guidelines for Show Modes](#)
- [Guidelines for Navigation within a Portlet](#)
- [Guidelines for Mobile Portlets](#)

6.1.1 Guidelines for Show Modes

Show mode exhibits the runtime portlet functionality seen by users. JPS offers some modes not offered by OracleAS Portal and vice versa. If you are coding portlets to JPS, you can declare custom portlet modes that map to the extra modes offered by OracleAS Portal.

An OracleAS Portal portlet may have the following Show modes, each with its own visualization and behavior. JPS portlets can define custom portlet modes in `portlet.xml`. Defining custom modes is especially useful if the portlet must interoperate with portal implementations from other vendors.

- [Shared Screen Mode \(View Mode for JPS\)](#)
- [Edit Mode \(JPS and OracleAS Portal\)](#)
- [Edit Defaults Mode \(JPS and OracleAS Portal\)](#)
- [Preview Mode \(JPS and OracleAS Portal\)](#)
- [Full Screen Mode \(OracleAS Portal\)](#)
- [Help Mode \(JPS and OracleAS Portal\)](#)
- [About Mode \(JPS and OracleAS Portal\)](#)
- [Link Mode \(OracleAS Portal\)](#)

6.1.1.1 Shared Screen Mode (View Mode for JPS)

A portlet uses Shared Screen mode (known as View mode in JPS) to appear on a page with other portlets. This is the mode most people think about when they envision a portlet. Portlets are rendered inside HTML table cells when in Shared Screen mode.

This means a portlet can display any content that can be rendered within a table cell, including, among other technologies, HTML, plug-ins, and Java applets. The actual size of the table cell is variable depending on user settings, the browser width, and the amount and style of content in the portlet. When developing portlets, remember that your portlet will share a page with others and you cannot completely control its dimensions and placement.

6.1.1.1.1 HTML Guidelines for Rendering Portlets Plain HTML is the most basic way to render portlets and provides a great deal of flexibility to portlet developers. You can use almost any standard HTML paradigm, such as links, forms, images, tables, as long as it can display within an HTML table cell. Improperly written HTML may appear inconsistently across different browsers and, in the worst case, could cause parts of your page not to appear at all. Ensure that you adhere to the following rules:

- **Use standard HTML.** The official HTML specification is available from the W3C (more information available at: <http://www.w3.org/MarkUp/>).
- **Avoid unterminated and extraneous tags.** The behavior of pages with improperly terminated tags is unpredictable because it depends on what the browser chooses to do. Tools like weblint (<http://www.weblint.org/>) and HTML Tidy (<http://www.w3.org/People/Raggett/tidy/>) can help detect and fix hanging and unnecessary tags.
- **Avoid elements that cannot be rendered properly in an HTML table cell.** Some constructs cannot be used simply because they do not display correctly in a table cell. Frames, for example, do not appear when inserted in a table.
- **Keep portlet content concise.** Do not try to take full screen content and expose it through a small portlet. You will only end up with portlet content too small or cramped for smaller monitors. Full screen content is best viewed in Full Screen mode of OracleAS Portal.
- **Do not create fixed-width HTML tables in portlets.** You have no way to tell how wide a column your portlet will have on a user's page. If your portlet requires more room than given, it might overlap with another portlet in certain browsers.
- **Avoid long, unbroken lines of text.** The result is similar to what happens with wide fixed-width tables. Your portlet might overlap other portlets in certain browsers.
- **Check behavior when resizing the page.** Test your portlet's behavior when the browser window is resized to ensure that it works in different browser window sizes.
- **Check behavior when the default browser font changes.** People may choose whatever font size they wish and they can change it at any time. Your portlet should handle these situations gracefully.

The HTML you use also impacts the perceived performance of your site. Users judge performance based on how long it takes for them to see the page they requested, and browsers require time to interpret and display HTML. Given that, you should:

- **Avoid deeply nested tables.** Deeply nested tables slow performance dramatically in some older browser versions. OracleAS Portal draws several levels of tables to render portlets. If your portlets use tables within tables, your users may have to wait quite a while for those pages to render.
- **Avoid lengthy, complex HTML.** Portlets share a page with other portlets. Thus, portlet generation times can significantly effect the overall performance of the page. If portlets must render complex HTML or wait for external resources, such as third party applications, it can greatly slow the rendering of the page.

6.1.1.1.2 Cascading Style Sheet Guidelines for Rendering Portlets The fonts and colors of every portlet on a page should match the style settings chosen by the user. To accomplish this goal, these style selections are embedded automatically using a Cascading Style Sheet (CSS) on each OracleAS Portal page. The portlets access these settings for their fonts and colors, either directly or using the API.

While different browsers have implemented varying levels of the full CSS specification, OracleAS Portal uses a very basic subset of this specification to allow for consistent fonts and colors. CSS implementation levels should not affect the consistency of your pages across browsers. Follow these guidelines for using CSS:

- **Use CSS instead of hard coding.** Hard coding fonts and colors is extremely dangerous. If you hard code fonts and colors, your portlet may look out of place when the user changes the page style settings. Since you have no way of knowing the user's font and color preference choices, you might also choose to hard code a font color that turns out to be the same as the user's chosen background color, in which case your portlet appears to be invisible to that user.
- **Use the CSS APIs to format your text.** The stylesheet definition is available at the top of OracleAS Portal pages, but you should not call it directly. Instead, use the APIs provided to format your text appropriately. This method ensures that your portlets work even if the stylesheet changes in the future.
- **Avoid using CSS for absolute positioning.** Since users can personalize their portal pages, you cannot guarantee that your portlet can appear in a particular spot.

6.1.1.2 Edit Mode (JPS and OracleAS Portal)

A portlet uses Edit mode to allow users to personalize the behavior of the portlet. Edit mode provides a list of settings that the user can change. These settings may include the title, type of content, formatting, amount of information, defaults for form elements, and anything that affects the appearance or content of the portlet.

Portal users typically access a portlet's Edit mode by clicking **Personalize** on the portlet banner. When you click **Personalize**, a new page appears in the same browser window. The portlet typically creates a Web page representing a dialog box to choose the portlet's settings. After applying the settings, users automatically return to the original page.

6.1.1.2.1 Guidelines for Edit Mode Operations The following guidelines should govern what you expose to users in Edit mode:

- **Allow users to personalize the title of the portlet.** The same portlet may be added to the same portal page several times. Allowing the user to personalize the title helps alleviate confusion.
- **If using caching, invalidate the content.** If personalizations cause a change in portlet display or content, you must ensure that the portlet content is regenerated and not returned from the cache. Otherwise, the user may see incorrect content.
- **Do not use Edit mode as an administrative tool.** Edit mode is meant to give users a way of changing the behavior of their portlets. If you need to change provider settings or do other administrative tasks, you should create secured portlets specifically for those tasks.
- **Only show mobile options when applicable.** The portlet can interrogate whether an OracleAS Portal instance is enabled for mobile devices. If the instance is not mobile-enabled, then you need not show any mobile-specific options. Furthermore, if the page might serve both mobile and desktop users, you should

consider delineating between mobile options and desktop options. Refer to [Section 6.1.3.6, "Tailor Personalization Pages"](#) for additional tips.

6.1.1.2.2 Guidelines for Buttons in Edit Mode For consistency and user convenience, Edit mode should implement the following buttons in the following order:

- **OK** saves the user personalizations and redirects the browser back to the calling portal page.
- **Apply** saves the user personalizations and reloads the current page.
- **Cancel** redirects the browser to the calling portal page without saving changes.

6.1.1.2.3 Guidelines for Rendering Personalization Values When you show the forms used to change personalization settings, you should default the values such that the user does not have to constantly re-enter settings. When rendering the personalization values, use the following sequence to provide consistent behavior:

1. **User preference:** Query and display this user's personalizations, if available.
2. **Instance defaults:** If no user personalizations are found, query and display system defaults for the portlet instance. These are set in Edit Defaults mode and apply only to this portlet instance.
3. **Portlet defaults:** If no system default personalizations are found, display general portlet defaults, which may be blank. General portlet defaults are sometimes hard coded into the portlet but should be overridden if either of the two previous conditions apply.

This logic allows the personalizations to be presented in a predictable way, consistent with the other portlets in the portal. PDK-Java makes this type of logic easy to implement.

6.1.1.3 Edit Defaults Mode (JPS and OracleAS Portal)

A portlet uses the Edit Defaults mode to allow page designers to personalize the default behavior of a particular portlet instance. Edit Defaults mode provides a list of settings that the page designer can change. These settings may include the title, type of content, formatting, amount of information, defaults for form elements, and anything that affects the appearance or content of the portlet.

These default personalization settings can change the appearance and content of that individual portlet for all users. Because Edit Defaults mode defines the system level defaults for what a portlet displays and how it displays it, this mode should not be used as an administrative tool or for managing other portlets.

Page designers access Edit Defaults mode, when editing a page, by clicking the Edit Defaults icon just above the portlet banner.

When users click the Edit Defaults icon, a new page appears in the same browser window. The portlet typically creates a Web page representing a dialog box to personalize the portlet instance settings. After applying the settings, users are automatically returned to the original page.

6.1.1.3.1 Guidelines for Edit Defaults Mode Options The following guidelines should govern what you expose to page designers in Edit Defaults mode:

- **If using caching, invalidate the cache.** If personalizations cause a change in portlet display or content, you must ensure that the portlet content is regenerated and not returned from the cache. Otherwise, the user may see incorrect content.

- **Do not use Edit Defaults mode as an administrative tool.** Edit Defaults mode gives users a way of changing the behavior of their portlets. If you need to change provider settings or do other administrative tasks, you should create secured portlets specifically for those tasks.
- **Only show mobile options when applicable.** The portlet can interrogate whether an OracleAS Portal instance is enabled for mobile devices. If the instance is not mobile-enabled, then you need not show any mobile-specific options. Furthermore, if the page might serve both mobile and desktop users, you should consider delineating between mobile options and desktop options. Refer to [Section 6.1.3.6, "Tailor Personalization Pages"](#) for additional tips.

6.1.1.3.2 Guidelines for Buttons in Edit Defaults Mode For consistency and user convenience, Edit Defaults mode should implement the following buttons in the following order:

- **OK** saves the user personalizations and redirects the browser back to the calling portal page.
- **Apply** saves the user personalizations and reloads the current page.
- **Cancel** redirects the browser to the calling portal page without saving changes.

6.1.1.3.3 Guidelines for Rendering Personalization Values When you show the forms used to change personalization settings, you should default the values so that the page designer does not have to constantly re-enter settings. When rendering personalization values, use the following sequence to provide consistent behavior:

1. **Instance preferences:** Query and display system defaults for the portlet instance.
2. **Portlet defaults:** If no system default personalizations are found, display general portlet defaults, which may be blank. General portlet defaults are sometimes hard coded into the portlet but should be overridden by system defaults.

This logic allows the personalizations to be presented in a predictable way, consistent with the other portlets in the portal.

6.1.1.4 Preview Mode (JPS and OracleAS Portal)

A portlet uses Preview mode to show the user how the portlet looks before adding it to a page. Preview mode visually represents what the portlet can do.

Portal users typically access a portlet's Preview mode by clicking its Preview icon from the Add Portlet page. A window then displays the preview of the chosen portlet. The user has the option to add that portlet to the page. Portal administrators may access Preview mode from the Portlet Repository.

Note that the portal does not draw the portlet banner when rendering the portlet in this mode.

6.1.1.4.1 Guidelines for Preview Mode The following guidelines should govern what you expose to users in Preview mode:

- **Provide an idea of what the portlet does.** Preview mode should generate enough content for the user to get an idea of the actual content and functionality of the portlet.
- **Keep your portlet previews small.** The amount of data produced in this mode should not exceed a few lines of HTML or a screen shot. Preview mode appears in a small area, and exceeding the window's size looks unprofessional and forces users to scroll.

- **Do not use live hyperlinks.** Links may not behave as expected when rendered on the Add Portlet page or the Portlet Repository. Hyperlinks can be simulated using the underline font.
- **Do not use active form buttons.** Forms may not behave as you expect them to when rendered on the Add Portlet page or the Portlet Repository. If you decide to render form elements, do not link them to anything.

6.1.1.5 Full Screen Mode (OracleAS Portal)

Portlets use Full Screen mode to provide a larger version of the portlet for displaying additional details. Full Screen mode lets a portlet have the entire window to itself.

For example, if a portlet displays expense information, it could show a summary of the top ten spenders in Shared Screen mode and the spending totals for everyone in Full Screen mode. Portlets can also provide a shortcut to Web applications. If a portlet provided an interface to submitting receipts for expenses in Shared Screen mode, it could link to the entire expense application from Full Screen mode.

Portal users access a portlet's Full Screen mode by clicking the title of the portlet.

Technically, JPS portlets do not have Full Screen mode. However, you can implement the equivalent of Full Screen mode for a JPS portlet with View mode (Shared Screen mode) and a maximized state for the window.

6.1.1.6 Help Mode (JPS and OracleAS Portal)

A portlet uses Help mode to display information about the functionality of the portlet and how to use it. The user should be able to find useful information about the portlet, its content, and its capabilities with this mode.

Portal users access a portlet's Help mode by clicking **Help** in the portlet header.

6.1.1.6.1 Guidelines for Help Mode The following guidelines should govern what you expose to users in Help mode:

- **Describe how to use the portlet.** Users may not know all the features your portlet provides just from its interface. Describe the features and how to get the most out of them.

6.1.1.7 About Mode (JPS and OracleAS Portal)

Users should be able to see what version of the portlet is currently running, its publication and copyright information, and how to contact the author. Portlets that require registration may link to Web-based applications or contact information from this mode, as well.

Portal users access a portlet's About mode by clicking **About** on the portlet header. A new page appears in the same browser window. The portlet can either generate the content for this new page or take the user to an existing page or application.

6.1.1.7.1 Guidelines for About Mode The following guidelines should govern what you expose to users in About mode:

- **Display relevant copyright, version, and author information.** Users want to know what portlet they are using and where they can get more information. The about page may become important when supporting your portlets.

6.1.1.8 Link Mode (OracleAS Portal)

A portlet uses Link mode to render a link to itself that displays on a mobile page. When the user clicks the link, the portlet is called in Show mode. The portlet then renders itself in the mobile View/Shared Screen mode.

For JPS portlets that declare support of the Oracle Mobile XML content type, OracleAS Portal renders the link in one of two ways:

- Call the portlet's View mode with the MINIMIZED window state, if the portlet declares support for it.
- Otherwise, render a link using the portlet's title.

6.1.1.8.1 Guidelines for Link Mode The following guidelines should govern what you expose to users in Link mode:

- **Limit content.** The purpose of Link mode is to render a link without extraneous material. Link mode should simply render the short title and possibly some relevant summary information (usually just a word or two).

6.1.2 Guidelines for Navigation within a Portlet

In some ways, navigation between different sections or pages of a single portlet is identical to navigation between standard Web pages. Users can submit forms and click links. In the case of typical, simple Web pages, both of these actions involve sending a message directly to the server responsible for rendering the new content, which is then returned to the client. In the case of portlets, which comprise only part of a page, the form submission or link rendered within the portlet does not directly target the portlet. It passes information to the portlet via the portal. If a link or form within a portlet does not refer back to the portal, then following that link takes the user away from the Portal, which is not typically the desired behavior.

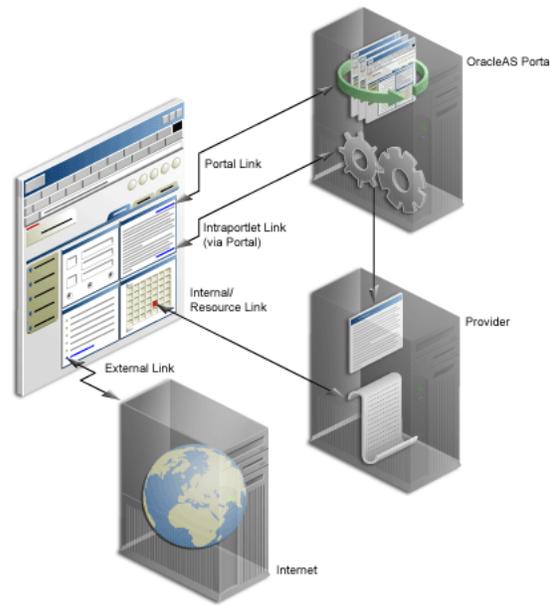
The portlet developer does not need to know the detailed mechanics of how the parameters of a form or link get passed around between the user, portal, and portlet. However, they must understand that they cannot write links in a portlet the same way they do for typical, simple Web pages.

6.1.2.1 Types of Links for Portlets

A portlet may render links of four classes:

- **Intraportlet links** require the portlet to be aware of the address of OracleAS Portal because they actually refer to it in some way.
- **Portal links**, like intraportlet links, must be aware of the address of OracleAS Portal for the same reason.
- **External links** make no reference to OracleAS Portal and behave in portlets as they would do in a normal Web page.
- **Internal/Resource links**, like external links, also make no reference to OracleAS Portal.

Figure 6–1 contains a summary of these link types. The arrows indicate how the links reference the resources to which they logically refer.

Figure 6–1 OracleAS Portal Link Types

6.1.2.1.1 Intraportlet Links Intraportlet links go to different sections or pages within a given portlet. Strictly speaking, they refer to the OracleAS Portal page containing the portlet, but they contain parameters that cause the portlet to render a different section or page within that OracleAS Portal page when it is requested by the user.

As a direct consequence, a portlet cannot expect to render links to different sections or pages of itself using relative links or absolute links based on its own server context. Intraportlet links are useful for intraportlet navigation, either as links or form submission targets.

6.1.2.1.2 Portal Links Portal links refer to significant pages within OracleAS Portal, such as the user's home page.

6.1.2.1.3 External Links External links refer neither to the portlet (via an OracleAS Portal page) nor to any part of the portal. If selected, these links take the user away from the OracleAS Portal, for example, www.oracle.com.

6.1.2.1.4 Internal/Resource Links Internal/Resource links refer to internal (to the portlet) resources. Sometimes they are exclusively used internally during portlet rendering, for example as a server side include. On other occasions, they may be used externally to reference portlet resources like images. In this latter case, you can use the PDK-Java `constructResourceURL` method in the `UrlUtils` class to retrieve images from behind a firewall via resource proxy. For example, `lottery.jsp` of the lottery sample, which is available with PDK-Java, contains resource proxy requests for images.

```
<%@ page contentType="text/html;charset=UTF-8" %>
<%@ page session="false" import="oracle.portal.provider.v2.render.*" %>
<%@ page import="oracle.portal.provider.v2.render.http.HttpPortletRendererUtil" %>
<%@ page import="oracle.portal.provider.v2.url.UrlUtils" %>
<%@ page import="oracle.portal.sample.v2.devguide.lottery.*" %>
<%
    LottoPicker picker = new LottoPicker();
    picker.setIdentity(request.getRemoteAddr() ); %>
<% PortletRenderRequest portletRequest = (PortletRenderRequest)
```

```
request.getAttribute("oracle.portal.PortletRenderRequest"); %>
<% String name = portletRequest.getUser().getName(); %>
<P class="PortletHeading1" ALIGN="CENTER">Hi <%= name %>, Your Specially
  Picked</P>
<P ALIGN="CENTER"><IMG SRC="<%= UrlUtils.constructResourceURL(portletRequest,
  HttpPortletRendererUtil.absoluteLink(request, "images/winningnumbers.gif")) %>"
  WIDTH="450" HEIGHT="69" ALIGN="BOTTOM" BORDER="0"></P>
<P>
<P ALIGN="CENTER">
<TABLE ALIGN="CENTER" BORDER="0" CELLPADDING="0" CELLSPACING="0">
<TR>
<%
  int [] picks = picker.getPicks();
  for (int i = 0; i < picks.length; i++) {
%>
      <TD>
<IMG SRC="<%= UrlUtils.constructResourceURL(portletRequest,
  HttpPortletRendererUtil.absoluteLink(request, "images/ball" + picks[i])) %>"
  .gif" WIDTH="68" HEIGHT="76" ALIGN="BOTTOM" BORDER="0">
</TD>
<%
  }
%>
```

These calls cause the Parallel Page Engine to make the request to the resource and return it to the browser. For session-based providers, any cookies returned from the original `initSession` call to the provider are sent with the request back to the provider to maintain the right session context.

6.1.3 Guidelines for Mobile Portlets

OracleAS Portal is capable of rendering its pages for both HTML and non-HTML (mobile) devices. When rendering for a mobile device, OracleAS Portal requires portlets to generate content in a universal markup language called OracleAS Wireless XML.

Many portlets, known as desktop portlets, generate only HTML responses and as such can only render themselves in standard HTML browsers. Some portlets, known as mobile portlets, generate only OracleAS Wireless XML responses. These portlets can render themselves on any device, including standard HTML browsers. Many portlets, though, take a hybrid approach that renders either HTML or OracleAS Wireless XML depending on the environment. These hybrid portlets can render themselves on any device, but they render best on standard HTML browsers. Although OracleAS Wireless XML is sufficient for HTML responses, it is not as expressive as HTML. Since portlets running in both a desktop and mobile environment are typically accessed via the desktop, developers commonly choose to create hybrid portlets that can provide the best possible rendition in the desktop environment.

When building mobile portlets, you should adhere to the following guidelines:

- [Declare Capabilities](#)
- [Declare a Short Title](#)
- [Implement Personalization of the Short Title](#)
- [Implement Link Mode](#)
- [Heed Device Information](#)
- [Tailor Personalization Pages](#)

For information on how to build mobile-enabled portlets, refer to [Section 7.2.9, "Enhancing Portlets for Mobile Devices"](#).

6.1.3.1 Declare Capabilities

To properly manage portlets, OracleAS Portal must know the set of content types a portlet generates. OracleAS Portal uses this information in the following ways:

- To restrict the Portlet Repository view in the Add Portlet dialog. Only those portlets capable of being rendered on the targeted page will appear in the Add Portlet dialog. For example, when a user invokes the Add Portlet dialog from a mobile design page, only portlets that indicate they can generate OracleAS Wireless XML responses are displayed.
- To display an icon in the Portlet Repository view in the Add Portlet dialog that identifies portlets capable of being rendered on many devices. For example, when a user invokes the Add Portlet dialog from a standard design page, those portlets that are mobile capable are listed with the following icon to indicate they will also render on mobile devices.

Figure 6–2 Mobile-enabled Icon



- To display only those portlets registered with the capability of generating OracleAS Wireless XML when rendering a standard page on a mobile device.
- To include only those portlets registered with the capability of generating OracleAS Wireless XML when creating a new mobile page based on an existing standard page.

6.1.3.2 Declare a Short Title

The small screen size of the typical mobile device limits the number of characters it can display in a single line without scrolling. Portlet titles, which appear as the menu item label when OracleAS Portal renders the mobile page in a menu structure, are often too long for mobile displays. Hence, you can define a short title for your portlet. The short title replaces the standard title where display space is limited.

6.1.3.3 Implement Personalization of the Short Title

The standard portlet title represents the default portlet instance name when rendered in the header of a portlet on a standard page. The portlet's short title represents the default portlet instance name when rendered as a menu item in a mobile page. Just as we recommend that portlets support personalizing the standard title, we also recommend that your portlets support personalizing the short title. This functionality allows the page designer or end user to give the instance a meaningful name.

6.1.3.4 Implement Link Mode

When OracleAS Portal renders a standard page to the desktop, it assembles portlets on the page in the tabular layout defined by the page designer. Thus, OracleAS Portal aggregates the content of many portlets on a single page. Because of their small displays, mobile devices cannot effectively display the content of multiple portlets on a single page. Instead, the page's portlets appear as links (menu items). Users view portlet content by navigating the menu one portlet at a time. The menu item links typically use the portlet's short name. Since well behaved portlets allow personalization of the short name and the portlet manages its own personalization

data, the portlet must participate in rendering the menu item link. To enable this functionality, you can implement the Link mode for portlets. In response to a request to render a portlet in Link mode, a portlet generates a link to itself in the appropriate content type. For example, if the render requests HTML, the portlet returns an anchor tag. If the render requests OracleAS Wireless XML, the portlet returns a `SimpleHref` tag.

6.1.3.5 Heed Device Information

All requests, whether from mobile devices or the desktop, pass general device information. For example, one passed attribute identifies the device class, such as `pcbrowser`, `pdabrowser`, or `microbrowser` (cell phones). A portlet developer may use this attribute to adjust the response's layout or quantity of data.

6.1.3.6 Tailor Personalization Pages

A single portlet instance must maintain a single set of user personalizations spanning all devices, mobile and desktop. Therefore, the same personalization page appears even if the instance is shared between a standard and mobile page, and some fields apply only to one environment, desktop or mobile. In this situation, the portlet should identify these fields that pertain to only one environment. For example, a portlet might display a mobile-only section on its personalization page. Furthermore, because the mobile capability is configurable, a portlet could remove mobile-only references from its personalization page when it detects that the mobile functionality is disabled.

6.2 Introduction to Java Portlet Specification (JPS) and WSRP

Organizations engaged in enterprise portal projects have found application integration to be a major issue. Until now, users developed portlets using proprietary APIs for a single portal platform and often faced a shortage of available portlets from a particular portal vendor. All this changes with the introduction of the following standards:

- Web Services for Remote Portlets (WSRP)
- Java Portlet Specification (JPS)¹ based on JSR 168

These two standards enable the development of portlets that interoperate with different portal products, and therefore widen the availability of portlets within an organization. This wider availability can, in turn, dramatically increase an organization's productivity when building enterprise portals.

WSRP is a Web services standard that allows the plug-and-play of visual, user-facing Web services with portals or other intermediary Web applications. Being a standard, WSRP enables interoperability between a standards-enabled container and any WSRP portal. WSRP defines:

- Web Services Definition Language (WSDL) interface for the invocation of WSRP services
- Markup fragment rules for markup emitted by WSRP services
- The method to publish, find, and bind WSRP services and metadata

JPS is a specification that defines a set of APIs to enable interoperability between portlets and portals, addressing the areas of aggregation, personalization, presentation, and security. JPS defines container services which provide:

- A portlet API for coding portlet functionality

¹ The Java Portlet Specification 1.0 arose from Java Specification Request 168 and the JSR168 Expert Group.

- The URL-rewriting mechanism for creating user interaction within a portlet container
- The security and personalization of portlets

Oracle actively participates in the WSRP committee and is also a member of the expert group for JPS.

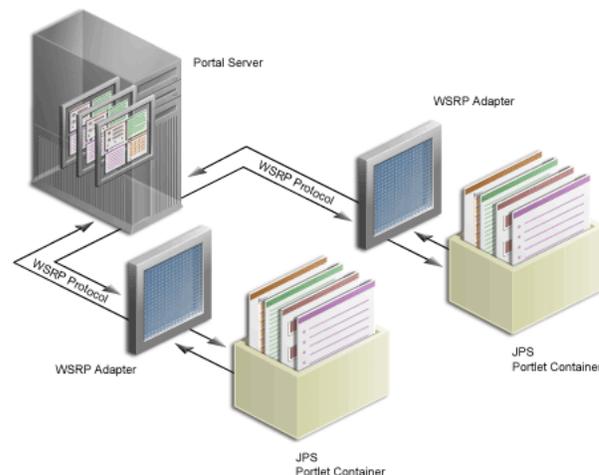
Note: .HTML forms can be submitted using either the `get` or `post` method, but the WSRP standard only requires the consumer (portal) to use the `post` method. Support of the `get` method is optional according to the standard. Since portal consumers are not required to support the `get` method, we highly recommended that you use the `post` method when developing your portlets.

6.2.1 The Relationship Between WSRP and JPS

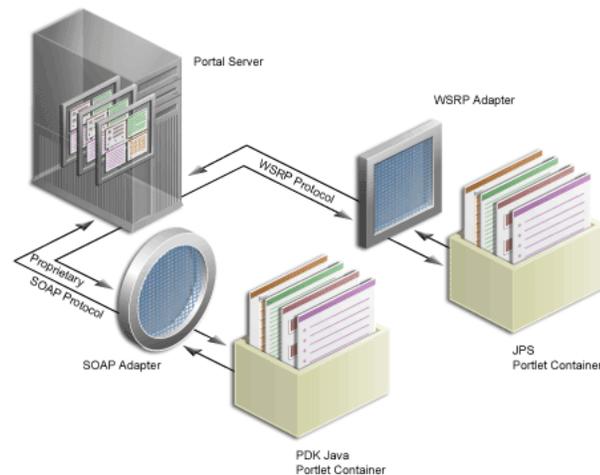
WSRP is a communication protocol between portal servers and portlet containers, while JPS describes the Java Portlet API for building portlets. Combining these standards enables developers to integrate their applications from any internal or external source as portlets with WSRP portals. Building portal pages becomes as simple as selecting portlets from the OracleAS Portal repository. [Figure 6-3](#) shows the architecture of the WSRP specification.

Note: [Figure 6-3](#) illustrates the use of JPS portlets with WSRP, but it should be noted that WSRP can also work with non-JPS portlets.

Figure 6-3 WSRP Specification Architecture



Since OracleAS Portal's existing architecture is so similar to the one specified by the WSRP committee, OracleAS Portal is able to support communication between our portal and both the new Java Portlet APIs as well as our existing APIs (PDK-Java). [Figure 6-4](#) shows the architecture of the WSRP portal. Notice that the JPS-compliant portlet container uses the WSRP protocol for communication and the PDK-Java portlet container uses Oracle's proprietary SOAP protocol for communication.

Figure 6–4 OracleAS Portal's WSRP Architecture

6.3 Configuring Your Application Server to Run JPS-Compliant Portlets

You can run JPS portlets from any number of configurations, each with its own set of requirements. This section describes the configuration steps for two of the more common scenarios for JPS portlets:

- [Configuring OC4J in Oracle Application Server](#)
- [Configuring OC4J Standalone](#)



Before you start the procedures in this section, you need to download the latest Java Portlet Container from OTN and unzip the contents to a local directory on the system you plan to configure for WSRP deployment. You can find the Java Portlet Container, as well as information regarding the most recent patches, on the PDK Download page on OTN:

<http://www.oracle.com/technology/products/ias/portal/pdk.html>

6.3.1 Configuring OC4J in Oracle Application Server

When you install the Oracle Application Server, you may or may not have chosen the Portal and Wireless option and the configuration steps you must follow vary between these cases:

- [Configuring with the Portal and Wireless Option](#)
- [Configuring without the Portal and Wireless Option](#)

6.3.1.1 Configuring with the Portal and Wireless Option

In order to deploy your JPS portlets to the Oracle Application Server with the Portal and Wireless option, you need to first perform the following steps:

1. Create a new OC4J instance into which you can deploy your JPS portlets:
 - a. Log in to the Application Server Control Console for the Oracle Application Server middle tier instance to which you wish to deploy JPS portlets.
 - b. The Application Server Control Console most likely displays multiple instances that you can manage (see [Figure 6–5](#)). Click the Oracle Application Server middle tier instance to which you plan to deploy JPS portlets.

Figure 6–5 Application Server Control Console Main Page

ORACLE Enterprise Manager 10g
Application Server Control Topology Preferences Help

Farm: orcl.us.oracle.com

Instances can be grouped and managed together by configuring standalone instances in a common repository. This collection of instances is known as an Oracle Application Server Farm.

Repository Type **Database**

Clusters Create Cluster

Select Name	Status Instances
There are no clusters in the farm.	

Standalone Instances

These instances belong to the farm but are not part of any cluster.

Join Cluster

Select Name	Host	Oracle Home
<input checked="" type="radio"/> as101202bif.isunrdg28.us.oracle.com	isunrdg28.us.oracle.com	/private/AS101202Installs/AS101202BIF
<input type="radio"/> as101202infra.dsunrdf23.us.oracle.com	dsunrdf23.us.oracle.com	/private/AS101202Installs/AS101202Infra

- c. Under System Components (see Figure 6–6), click **Create OC4J Instance**.

Figure 6–6 System Components in Application Server Control Console

System Components Enable/Disable Components Create OC4J Instance

Start Stop Restart Delete OC4J Instance

Select All Select None

Select Name	Status	Start Time	CPU Usage (%)	Memory Usage (MB)
<input type="checkbox"/> Discoverer	↑	Sep 30, 2005 2:56:41 AM	0.00	18.96
<input type="checkbox"/> Forms	↑	Sep 30, 2005 2:56:49 AM	0.00	0.00
<input type="checkbox"/> home	↑	Sep 30, 2005 2:56:49 AM	0.04	149.36
<input type="checkbox"/> HTTP_Server	↑	Sep 30, 2005 2:56:41 AM	0.12	58.27
<input type="checkbox"/> OC4J_BI_Forms	↑	Sep 30, 2005 2:56:49 AM	0.10	251.95
<input type="checkbox"/> OC4J_Portal	↑	Sep 30, 2005 2:56:49 AM	0.14	286.30
<input type="checkbox"/> OC4J_Wireless	↑	Sep 30, 2005 2:57:31 AM	0.10	194.40

- d. Enter the name of the instance and click **Create**. For example, you might name the instance `wsrp`. Note that it may take a few seconds for the instance to be created.
 - e. A confirmation message appears indicating that the instance was created. Note that the instance is not started upon creation and it should not be started until you have completed the other configuration steps that follow.
 - f. Click **OK** to return to the Home tab.
2. Copy `wsrp-install.jar` from your portlet container directory (where you unzipped the Java Portlet Container) to a location named for the OC4J instance. For example:

```
MID_TIER_ORACLE_HOME/j2ee/wsrp
```

In this example, the OC4J instance was named `wsrp`.

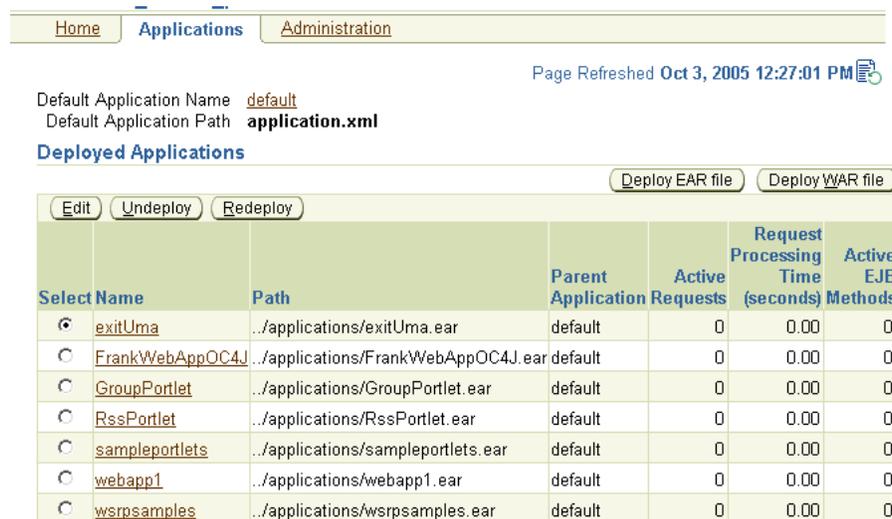
3. Run the auto-installer from the above directory:

```
cd MID_TIER_ORACLE_HOME/j2ee/wsrp
MID_TIER_ORACLE_HOME/jdk/bin/java -jar wsrp-install.jar
```

This installation utility installs the portlet container and makes the necessary configuration changes for the container to run.

4. Start the OC4J instance from the Application Server Control Console:
 1. From the System Components area, select the component (for example, `wsrp`).
 2. Click **Start**.
5. You should now test your WSRP configuration to confirm it is working correctly. You can use OracleAS Portal's sample WSRP producer, `wsrp-sample.ear`, for this purpose.
 - a. Return to the Application Server Control Console for the Oracle Application Server middle tier instance you configured for JPS portlets.
 - b. Click the Oracle Application Server middle tier instance to which you plan to deploy JPS portlets.
 - c. Click the OC4J container you created earlier, `wsrp`.
 - d. Click the **Applications** tab (see [Figure 6-7](#)).

Figure 6-7 Applications Tab of OC4J Container



- e. Click **Deploy EAR file**.
- f. Fill out the Deploy Application page (see [Figure 6-8](#)) as described in [Table 6-1](#).

Table 6-1 Deployment Settings for EAR File, Portal and Wireless

Setting	Value
J2EE Application	<code>PORTLET_CONTAINER/wsrp-samples.ear</code> where <code>PORTLET_CONTAINER</code> is your portlet container directory
Application Name	<code>sampleportlets</code>
Parent Application	<code>default</code>

Figure 6–8 Deployment Settings Page for EAR File

Deploy Application

For a J2EE application to be successfully deployed on the OC4J container, the application has to be assembled correctly as an Enterprise Archive (ear) file, with all the needed application and module deployment descriptors. The OC4J container generates default OC4J specific deployment descriptors when the application is deployed. If you have custom OC4J specific deployment descriptors that you wish to use, you need to include these in the ear file.

J2EE Application

* Application Name

Parent Application

- g. Click **Continue**.
- h. On the URL Mapping for Web Modules page (see [Figure 6–9](#)), change /portletapp to /sampleportlets.

Figure 6–9 URL Mapping for Web Modules Page

Deploy Application: URL Mapping for Web Modules

A web module needs to be mapped to an URL pattern in the default web site before it can be accessed. The following table lists all the web modules found in your application. Specify the URL mapping for each of these modules.

Name	URL Mapping
OracleSamplePortlets	<input type="text" value="/sampleportlets"/>

- i. You do not need to make any changes on the subsequent pages of the wizard, so click **Finish**.
- j. The Review page should now appear ([Figure 6–10](#)). Carefully check the settings to ensure that they are correct.

Figure 6–10 Review Page

Deploy Application: Review

Ear File to Deploy **wsrp-samples.ear**
 Deployment Destination **Instance OC4J_WSRP_pmoskovi**
 URLs Mapped to Application **/sampleportlets**

TIP The HTTP listener will be restarted after deployment, to pick up the new web module mappings.

- k. Click **Deploy**.

Figure 6–11 Confirmation Page**Confirmation**

Application "sampleportlets" was successfully deployed.

OK

- I. Click OK to dismiss the confirmation page.
6. Now that you have deployed the sample EAR file, you need to test its WSDL URL by entering it into a browser. The WSDL URL is of the form:

`http://host:port/sampleportlets/portlets?WSDL`

You should see a page similar to the one shown in [Figure 6–12](#).

Figure 6–12 WSRP Producer WSDL Page

```
<?xml version="1.0" encoding="UTF-8" ?>
- <wsdl:definitions xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
  xmlns:bind="urn:oasis:names:tc:wsrp:v1:bind" xmlns:wsd="http://schemas.xmlsoap.org/wsdl/"
  targetNamespace="urn:oasis:names:tc:wsrp:v1:wSDL">
  <import namespace="urn:oasis:names:tc:wsrp:v1:bind" location="http://www.oasis-
  open.org/committees/wsrp/specifications/version1/wsrp_v1_bindings.wsdl" />
- <wsdl:service name="WSRPService">
- <wsdl:port binding="bind:WSRP_v1_Markup_Binding_SOAP" name="WSRPBaseService">
  <soap:address location="http://stamf15.us.oracle.com:7779/sampleportlets/portlets/WSRPBaseService" />
  </wsdl:port>
- <wsdl:port binding="bind:WSRP_v1_ServiceDescription_Binding_SOAP" name="WSRPServiceDescriptionService">
  <soap:address
  location="http://stamf15.us.oracle.com:7779/sampleportlets/portlets/WSRPServiceDescriptionService" />
  </wsdl:port>
- <wsdl:port binding="bind:WSRP_v1_Registration_Binding_SOAP" name="WSRPRegistrationService">
  <soap:address location="http://stamf15.us.oracle.com:7779/sampleportlets/portlets/WSRPRegistrationService" />
  </wsdl:port>
- <wsdl:port binding="bind:WSRP_v1_PortletManagement_Binding_SOAP" name="WSRPPortletManagementService">
  <soap:address
  location="http://stamf15.us.oracle.com:7779/sampleportlets/portlets/WSRPPortletManagementService" />
  </wsdl:port>
  </wsdl:service>
</wsdl:definitions>
```

7. Using the WSDL URL, register the sample producer as you would any other producer by following the instructions in [Section 6.4.2.4, "Registering and Viewing Your Portlet"](#). Further test the configuration by adding some of the sample portlets to a page and displaying the page. If the registration fails for any reason or you cannot add portlets to a page, then please refer to the troubleshooting information in [Section B.2, "Diagnosing Java Portlet Problems"](#).
8. Once the sample producer registers successfully, you are ready to begin building your own portlets as described in [Section 6.4.2, "Building JPS-compliant Portlets"](#).

6.3.1.2 Configuring without the Portal and Wireless Option

In some cases, you may choose to install the Oracle Application Server without the Portal and Wireless option. For example, you might instead choose the J2EE and Web Cache, or Business Intelligence and Forms option. If you did choose something other than Portal and Wireless, you must perform the following steps to prepare for deploying JPS portlets:

1. Create a new OC4J instance into which you can deploy your JPS portlets:

- a. Log in to the Application Server Control Console for the Oracle Application Server middle tier instance to which you wish to deploy JPS portlets.
 - b. The Application Server Control Console most likely displays multiple instances that you can manage (see [Figure 6-5](#)). Click the instance to which you plan to deploy JPS portlets.
 - c. Under System Components (see [Figure 6-6](#)), click **Create OC4J Instance**.
 - d. Enter the name of the instance and click **Create**. For example, you might name the instance `wsrp`. Note that it may take a few seconds for the instance to be created.
 - e. A confirmation message appears indicating that the instance was created. Note that the instance is not started upon creation and it should not be started until you have completed the remainder of the configuration steps.
 - f. Click **OK** to return to the Home tab.
2. Copy `wsrp-install.jar` from your portlet container directory to a location named for the OC4J instance. For example:

```
MID_TIER_ORACLE_HOME/j2ee/wsrp
```

In this example, the OC4J instance was named `wsrp`.

3. Run the auto-installer from the above directory:

```
cd MID_TIER_ORACLE_HOME/j2ee/wsrp
MID_TIER_ORACLE_HOME/jdk/bin/java -jar wrsp-install.jar
```

This installation utility installs the portlet container and makes the necessary configuration changes for the container to run.

4. JPS portlets store their registration and preference information in a database. For a non-Portal and Wireless installation, you must create a database schema with the relevant tables to store this information. You can use the Oracle Application Server infrastructure database or any other Oracle database for this purpose. To create this store, you must first connect to the database as a user with SYSDBA privileges:

```
sqlplus "sys/<sys_password>@<service_name> AS SYSDBA"
```

5. To create the preference store, run the `ptlwsrp_data.sql` script using the following command. You will find `ptlwsrp_data.sql` in the root directory where you unzipped the portlet container.

Note: `ptlwsrp_data.sql` creates a database user named `portlet_prefs` with a password of `portlet_prefs`, and populates the schema with the required database objects.

```
@ptlwsrp_data portlet_prefs portal
```

where `portlet_prefs` is the name of a user account that stores the data and `portal` is the name of a default table space to use for that account.

6. Return to the Application Server Control Console. Log in again if necessary and navigate back to the Home tab for the instance to which you plan to deploy JPS portlets (see [Figure 6-6](#)).
7. Click the component (for example, `wsrp`).

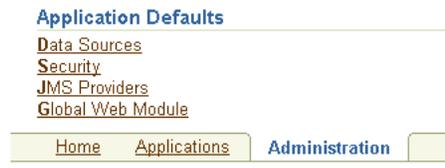
- Click the **Administration** tab.

Figure 6–13 Administration Tab for the WSRP Container



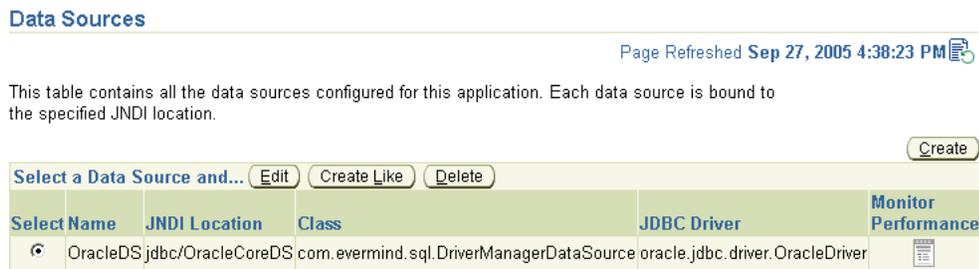
- Under Application Defaults, click **Data Sources**.

Figure 6–14 Application Defaults on Administration Tab



- Click **Create** on the Data Sources page.

Figure 6–15 Data Sources Page



- Fill out the fields on the Create Data Source page as per [Table 6–2](#).

Table 6–2 Create Data Source Settings

Setting	Value
Name	OracleDS
Data Source Class	com.evermind.sql.DriverManagerDataSource
JDBC URL	For example: jdbc:oracle:thin:@(description=(address=(host=myhost.mydomain.com)(protocol=tcp)(port=1521))(connect_data=(service_name=myservice.mydomain.com)))
JDBC Driver	oracle.jdbc.driver.OracleDriver
Username	portlet_prefs You need to fill in the appropriate user account name for your system.
Password	portlet_prefs You need to fill in the password for the appropriate user account for your system

Table 6–2 (Cont.) Create Data Source Settings

Setting	Value
Location	jdbc/emulatedPortletPrefs
Transactional (XA) Location	jdbc/xa/portletPrefs
EJB Location	jdbc/portletPrefs

12. Click **Create**.
13. Click **Yes** when prompted to restart the OC4J instance.
14. You should now test your WSRP configuration to confirm it is working correctly. You can use OracleAS Portal's sample WSRP producer, `wsrp-sample.ear`, for this purpose.
 - a. Return to the Application Server Control Console for the Oracle Application Server middle tier instance to which you wish to deploy JPS portlets.
 - b. Click the Oracle Application Server middle tier instance to which you plan to deploy JPS portlets.
 - c. Click the OC4J container you created earlier, `wsrp`.
 - d. Click the **Applications** tab (see [Figure 6–7](#)).
 - e. Click **Deploy EAR file**.
 - f. Fill out the Deploy Application page (see [Figure 6–8](#)) as described in [Table 6–3](#).

Table 6–3 Deployment Settings for EAR File, non-Portal and Wireless

Setting	Value
J2EE Application	<code>PORTLET_CONTAINER/wsrp-samples.ear</code> where <code>PORTLET_CONTAINER</code> is your portlet container directory (where you unzipped the portlet container)
Application Name	<code>sampleportlets</code>
Parent Application	<code>default</code>

- g. Click **Continue**.
- h. On the URL Mapping for Web Modules page (see [Figure 6–9](#)), change `/portletapp` to `/sampleportlets`.
- i. You do not need to make any changes on the subsequent pages of the wizard, so click **Finish**.
- j. The Review page should now appear ([Figure 6–10](#)). Carefully check the settings to ensure that they are correct.
- k. Click **Deploy**.
- l. Click **OK** to dismiss the confirmation page.
15. Now that you have deployed the sample EAR file, you need to test its WSDL URL by entering it into a browser. The WSDL URL is of the form:

```
http://host:port/sampleportlets/portlets?WSDL
```

You should see a page similar to the one shown in [Figure 6–12](#).

16. Using the WSDL URL, register the sample producer as you would any other producer by following the instructions in [Section 6.4.2.4, "Registering and Viewing Your Portlet"](#). Further test the configuration by adding some of the sample portlets to a page and displaying the page. If the registration fails for any reason or you cannot add portlets to a page, then please refer to the troubleshooting information in [Section B.2, "Diagnosing Java Portlet Problems"](#).
17. Once the sample producer registers successfully, you are ready to begin building your own portlets as described in [Section 6.4.2, "Building JPS-compliant Portlets"](#).

6.3.2 Configuring OC4J Standalone

In order to deploy your JPS portlets to OC4J standalone, you need to first perform the following steps:

1. If you do not already have OC4J standalone, download it from OTN and install it. You can obtain the download from:

```
http://www.oracle.com/technology/software/products/ias/htdocs/utilsoft.html
```

If you already have a running OC4J standalone instance, you can skip this step.

2. Stop the OC4J standalone instance with the following command line:

```
java -jar admin.jar ormi://localhost admin $admin_password -shutdown
```

3. Copy `wsrp-install.jar` from your portlet container directory to:

```
OC4J_HOME/j2ee/home
```

4. Run the auto-installer from the above directory:

```
cd OC4J_HOME/j2ee/home
java -jar wrsp-install.jar
```

This installation utility installs the portlet container and makes the necessary configuration changes for the container to run.

5. JPS portlets store their registration and preference information in a database. For an OC4J standalone installation, you must create a database schema with the relevant tables to store this information. You can use the Oracle Application Server infrastructure database or any other Oracle database for this purpose. To create this store, you must first connect to the database as a user with SYSDBA privileges:

```
sqlplus "sys/<sys_password>@<service_name> AS SYSDBA"
```

6. To create the preference store, run the `ptlwsrp_data.sql` script using the following command. You will find `ptlwsrp_data.sql` in the root directory where you unzipped the portlet container.

Note: `ptlwsrp_data.sql` creates a database user named `portlet_prefs` with a password of `portlet_prefs`, and populates the schema with the required database objects.

```
@ptlwsrp_data portlet_prefs portal
```

where `portlet_prefs` is the name of a user account that stores the data and `portal` is the name of a default table space to use for that account.

7. Edit the file `data-sources.xml` located in `OC4J_HOME/j2ee/home/config`, where `OC4J_HOME` is the location in which you unzipped OC4J. Add a new `data-source` entry that maps the connection details for the preference store schema to a JDBC data source with an `ejb-location` of `jdbc/portletPrefs`. For example:

```
<data-source
    class="com.evermind.sql.DriverManagerDataSource"
    name="OracleDS"
    location="jdbc/emulatedPortletPrefs"
    xa-location="jdbc/xa/portletPrefs"
    ejb-location="jdbc/portletPrefs"
    connection-driver="oracle.jdbc.driver.OracleDriver"
    username="portlet_prefs"
    password="portlet_prefs"
    url="jdbc:oracle:thin:@(description=(address=
        (host=myhost.domain.com)(protocol=tcp)
        (port=1521))(connect_data=(
        service_name=myservice.mydomain.com)))"
/>
```

Note that the values for `username`, `password`, and `url` are just examples. You will need to use the appropriate values for your system.

8. Start the OC4J instance with one of the following command lines to ensure that it is working properly:

On Windows:

```
start java -jar oc4j.jar
```

On UNIX:

```
java -jar oc4j.jar &
```

9. You should now test your WSRP configuration to confirm it is working correctly. You can use OracleAS Portal's sample WSRP producer, `wsrp-sample.ear`, for this purpose. Before proceeding, you need to deploy the sample portlets EAR file. Use `sampleportlets` as the context root of the Web application.

Refer to Section 1.6, "Deploying Applications" of the *Oracle Application Server Containers for J2EE Standalone User's Guide* for complete information about how to deploy an EAR file.

10. Once you have deployed the sample EAR file, you need to test its WSDL URL by entering it into a browser. The WSDL URL is of the form:

```
http://host:port/sampleportlets/portlets?WSDL
```

You should see a page similar to the one shown in [Figure 6-12](#).

11. Using the WSDL URL, register the sample producer as you would any other producer by following the instructions in [Section 6.4.2.4, "Registering and Viewing Your Portlet"](#). Further test the configuration by adding some of the sample portlets to a page and displaying the page. If the registration fails for any reason or you cannot add portlets to a page, then please refer to the troubleshooting information in [Section B.2, "Diagnosing Java Portlet Problems"](#).
12. Once the sample producer registers successfully, you are ready to begin building your own portlets as described in [Section 6.4.2, "Building JPS-compliant Portlets"](#).

6.4 Building JPS-Compliant Portlets with Oracle JDeveloper

Using a convenient download from OTN, you can add extensions to Oracle JDeveloper for building portlets. To use this extension, perform the steps in the following procedures:

- [Installing the Portal Extension for Oracle JDeveloper](#)
- [Building JPS-compliant Portlets](#)

This section assumes the following:

- You are familiar with portlet terminology such as portlet Show modes. Refer to [Chapter 1, "Understanding Portlets"](#) and [Section 6.1, "Guidelines for Creating Java Portlets"](#).
- You have configured your Oracle Application Server to run JPS portlets in one of the configurations described in [Section 6.3, "Configuring Your Application Server to Run JPS-Compliant Portlets"](#).
- You are already familiar with Oracle JDeveloper and know how to build and deploy Java components using it. You can download Oracle JDeveloper from OTN. Visit the Oracle JDeveloper page on OTN:

<http://www.oracle.com/technology/products/jdev/index.html>

6.4.1 Installing the Portal Extension for Oracle JDeveloper

The OracleAS Portal Developer Kit (PDK) provides you with the necessary libraries to install an extension for Oracle JDeveloper that dramatically increases your flexibility and productivity when developing portlets. This extension includes two wizards, one for building PDK-Java portlets and one for building JPS-compliant portlets. Both wizards guide you through the steps of creating the portlet skeleton and all you need do then is implement your own business logic.

To obtain the extension:

1. Visit the PDK Download page on OTN:
<http://www.oracle.com/technology/products/ias/portal/pdk.html>
2. Under **Portal Extension for JDeveloper**, click **Portal Extension for Oracle JDeveloper** to download the extension.
3. Click **Portal Extension for Oracle JDeveloper Installation Guide** for installation instructions.

6.4.2 Building JPS-compliant Portlets

Once you have successfully installed the Portlet Wizard for Java, you can begin your interoperability portlet development quickly and easily with Oracle JDeveloper:

- [Creating a Portlet](#): Use the wizard to create your basic portlet code and the necessary configuration files for the framework.
- [Adding Portlet Logic](#): Extend the example code with your own business logic.
- [Deploying Your Portlet to an Application Server](#): Use Oracle JDeveloper to deploy your application to your application server.
- [Registering and Viewing Your Portlet](#): Register and view your portlet with OracleAS Portal.

6.4.2.1 Creating a Portlet

This section walks you through the Portlet Wizard. You can choose which portlet Show modes you want to implement and the implementation method (JSP, HTTP servlet, Java class, or HTML). The wizard then creates a simple sample implementation for each of the selected modes.

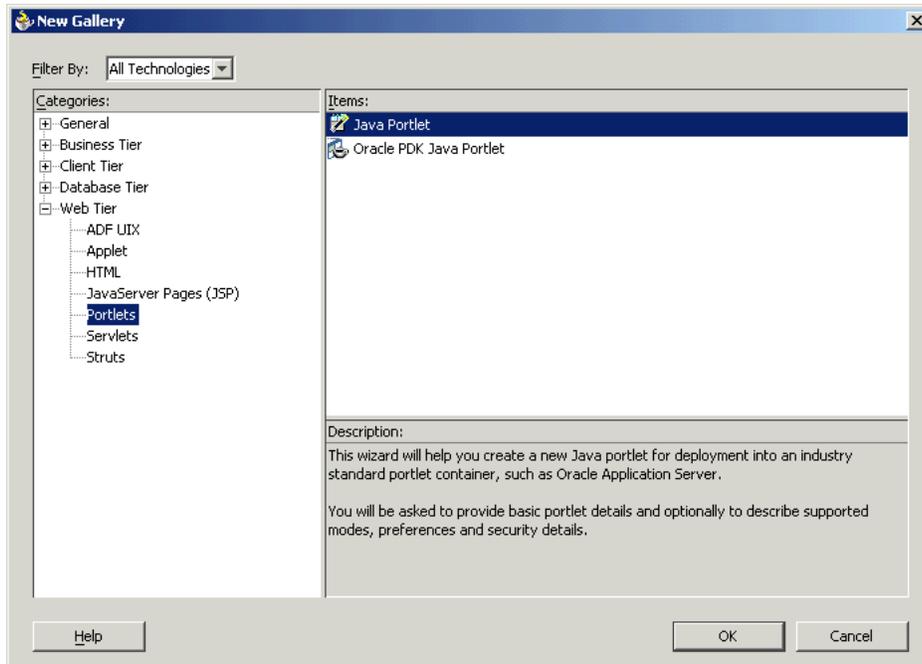
1. After you open Oracle JDeveloper, click the workspace where you want to create this project. If you do not have a workspace, you can create one as follows:
 - a. Right-click the **Applications** node in the Application Navigator and choose **New**.
 - b. Choose **Workspace** from the Items list in the New Gallery dialog box.
 - c. Click **OK**.
 - d. Enter a **Workspace Name** and **Directory Name**, and clear **Add a New Empty Project** in the Create Workspace dialog box.
 - e. Click **OK**.
2. Right-click the name of the workspace in the Application Navigator and choose **New Project**.
3. Click **Empty Project** in the Items list in the New Gallery dialog box.
4. Click **OK**.
5. Enter the **Project Name** and **Directory Name** in the Create Project dialog box.
6. Click **OK**.
7. Right-click your project and select **New**.
8. In the Categories list, expand the Web Tier category and click **Portlets**.

Note: If you cannot find **Portlets**, refer to [Section 6.4.1, "Installing the Portal Extension for Oracle JDeveloper"](#) to ensure that you have installed the extension correctly.

9. In the Items list, click **Java Portlet**.

Note: Clicking **Java Portlet** will open the Portlet Wizard for creating JPS-compliant portlets. Clicking **Oracle PDK Java Portlet** will open the Portlet Wizard for creating PDK-Java portlets.

Figure 6–16 New Dialog Box



10. Click **OK**. The Portlet Wizard opens.
11. If you are on the Welcome page of the wizard, click **Next**.

Figure 6–17 Welcome Page



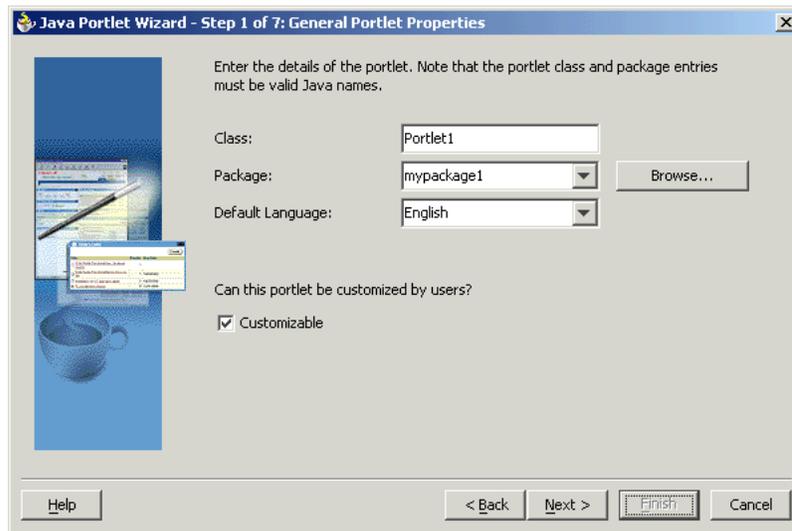
12. On the General Portlet Properties page, enter the values as described in [Table 6–4](#) and shown in [Figure 6–18](#).

Table 6–4 General Portlet Properties Values

Property	Value
Class	Enter the name of the class the wizard will create. The field is primed with a default class name that you may accept or change.

Table 6–4 (Cont.) General Portlet Properties Values

Property	Value
Package	Browse the packages in the project and select the one in which the class will reside. If you do not select a package, the wizard uses the default package of the project.
Default Language	Select the default language that your portlet will support. The wizard uses English by default.
Customizable	Select whether to allow end users to personalize your portlet. The wizard allows personalization by default. For the purposes of this example, accept the default.

Figure 6–18 General Portlet Properties Page

13. Click **Next**.

Note: **Finish** is not enabled until after the second step of the wizard has been completed.

14. On the Name and Attribution page, enter the values as described in [Table 6–5](#) and shown in [Figure 6–19](#).

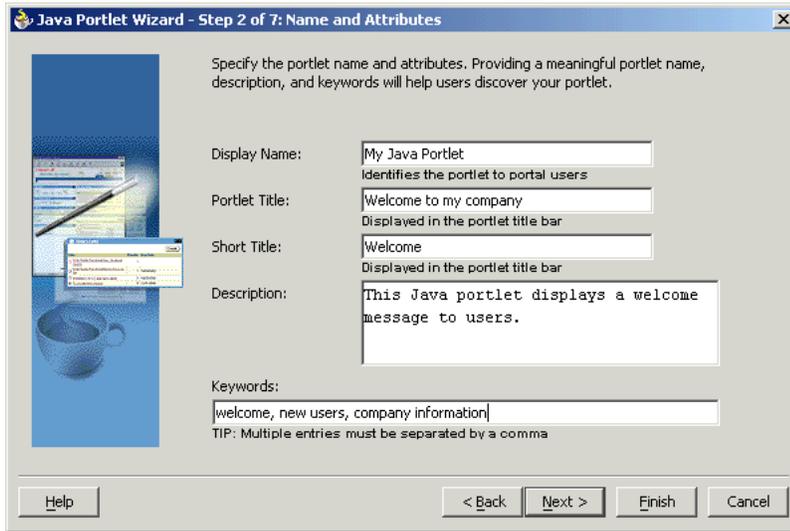
Table 6–5 Name and Attribution Values

Property	Value
Display Name (required)	Enter the name that will be displayed in the OracleAS Portal catalog or repository. Enter <code>My Java Portlet</code> for this example.
Portlet Title (required)	Enter the title that will appear on the portlet header (on a portal page). Enter <code>Welcome to my company</code> for this example.
Short Title	Enter the title that will appear on the portlet header for mobile devices. Enter <code>Welcome</code> for this example.
Description	Enter a description of your portlet. Enter <code>This Java portlet displays a welcome message to users.</code> for this example.

Table 6–5 (Cont.) Name and Attribution Values

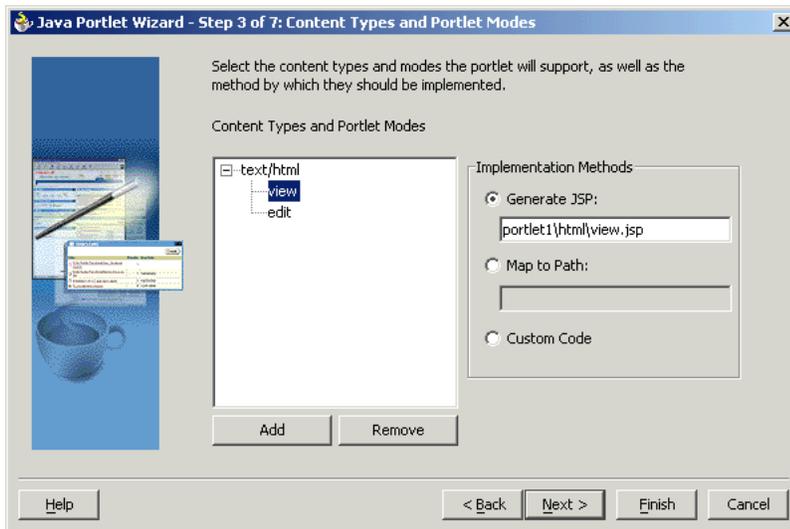
Property	Value
Keywords	Enter keywords to help users find the portlet in the portal. Enter welcome, new users, company information for this example.

Figure 6–19 Name and Attribution Page



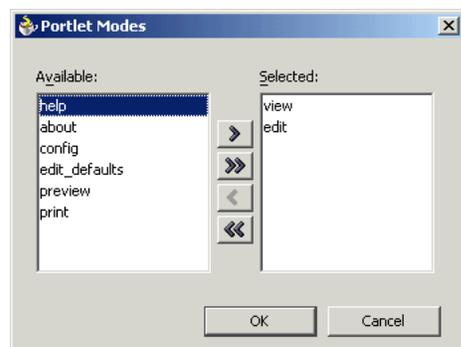
15. Click **Next** to continue specifying the portlet’s properties or click **Finish**. If you click **Finish** at this point, the wizard chooses the default values for all remaining settings.
16. On the Content Types and Portlet Modes page shown in [Figure 6–20](#), select the content types for your portlet and map the portlet modes to an implementation. By default, your portlet will display text/html as the content type, and a portlet mode of View. If **Customizable** was selected on the General Portlet Properties page, edit also appears as a portlet mode for text/html.

Figure 6–20 Content Types and Portlet Modes Page



- a. If you need to add content types other than `text/html`, click `text/html` and then click **Add**. For the purposes of this example, you do not need to add any other content types.
- b. If you need to add additional portlet modes, click an existing portlet mode (for example, `view`) and click **Add**. The list of available portlet modes displays, as shown in [Figure 6–21](#), and you can add portlet modes by moving the desired portlet modes from the Available Modes list to the Selected Modes list. For this example, you do not need to select any other portlet modes. When you are finished with the Portlet Modes dialog box, click **OK**.

Figure 6–21 Portlet Modes Dialog Box

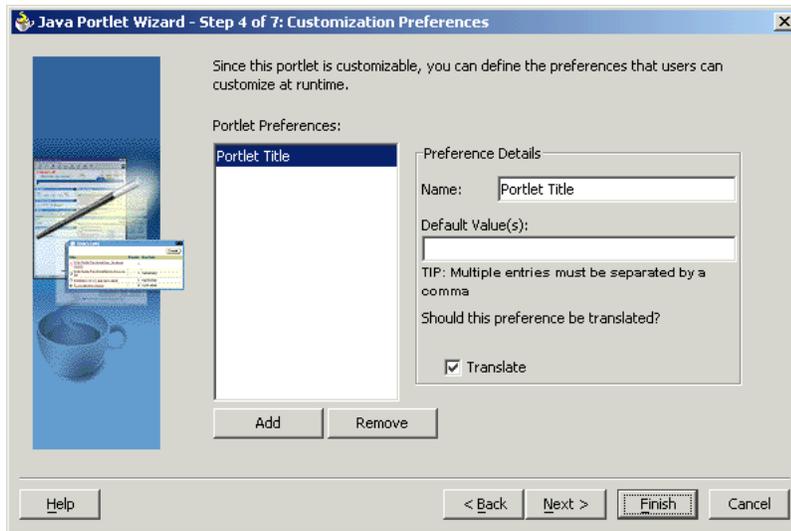


- c. Once you have added all of the desired portlet modes, you need to choose the function to be performed for each mode. For each portlet mode, click the portlet mode and select a radio button on the right. For the purposes of this example, choose **Generate JSP** for both the `edit` and `view` portlet modes, and leave the default path and file name of the generated JSP. For more information on portlet modes, refer to [Section 6.1, "Guidelines for Creating Java Portlets"](#).

Note: The Generate JSP and Custom Code implementation methods generate code for you in the specified location. The Map to Path implementation method routes the request through to an existing Web resource that you need to create separately

17. Click **Next**.
18. Because you selected **Customizable** on the General Portlet Properties page earlier in the wizard, the Customization Preferences page, shown in [Figure 6–22](#), now displays, and you can declare preferences for your portlet. If you had not selected **Customizable** earlier, then this page would have been skipped. On the Customization Preferences page, you specify a preference name, default value, and whether the preference value should be translated:

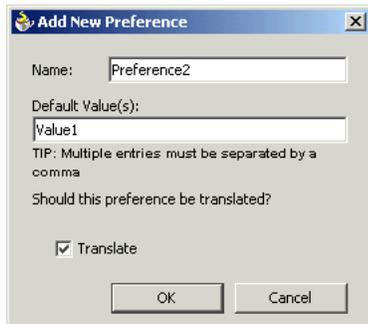
Figure 6–22 Customization Preferences Page



- a. To add a preference, click **Add** and fill in the Add New Preference dialog box, show in [Figure 6–23](#), (Name, Default Value(s), and whether it should be translated). For this example, you do not need to add any preferences.

Note: The Name is always translated, but there is not always a need to translate the Default Value. For example, if the value is an integer, no translation is needed

Figure 6–23 Add New Preference Dialog Box



- b. To delete a preference, choose it in the Portlet Preferences list and click **Remove**. For this example, you do not need to delete any preferences.
19. Click **Next**.
 20. On the Security Roles page, shown in [Figure 6–24](#), you can add security roles to your portlet. The wizard has no predefined security roles. It parses the `web.xml` for security roles and enables them to be referenced by your portlet. You will not need to do anything for this step as a new project has no security roles defined. You can manually create the security roles according to JPS later.

Figure 6–24 Security Roles Page

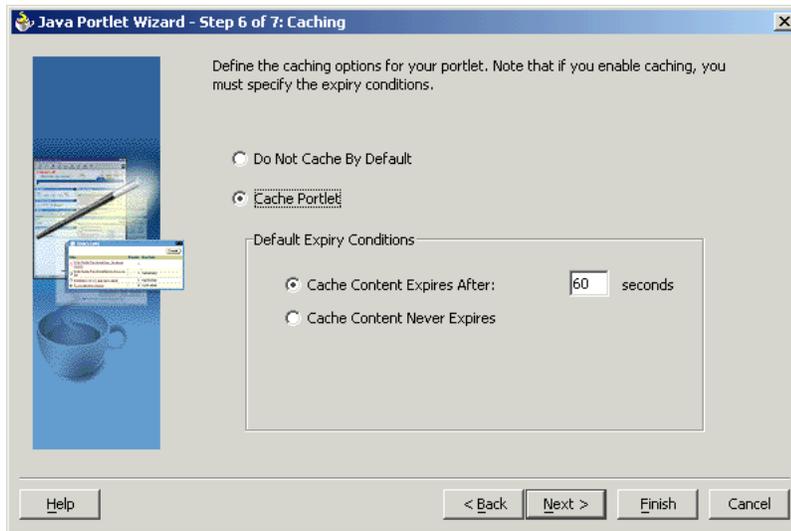


21. Click **Next**.
22. On the Caching page, you specify whether to enable caching of your portlet by default. The portlet itself may choose to cache content for any given response. The settings on this page apply only when the portlet itself does not specify a caching condition for a response. For this example, fill out this page as described below and shown in [Figure 6–25](#):
 - a. Click **Cache Portlet**.
 - b. Click **Cache Content Expires After**.
 - c. Accept the default duration of the cached copy (60 seconds).

Note: If you do not want any default caching for this portlet, choose **Do Not Cache By Default**. In this case, the wizard actually sets a cache duration of 0 seconds. As stated above, this cache setting only comes into play when the portlet itself does not specify a caching condition for a response.

If you choose no caching here and you later decide that you want default caching for the portlet, you can easily go back and change the cache duration value in the `portlet.xml` file, which is generated by the wizard, to a number greater than zero.

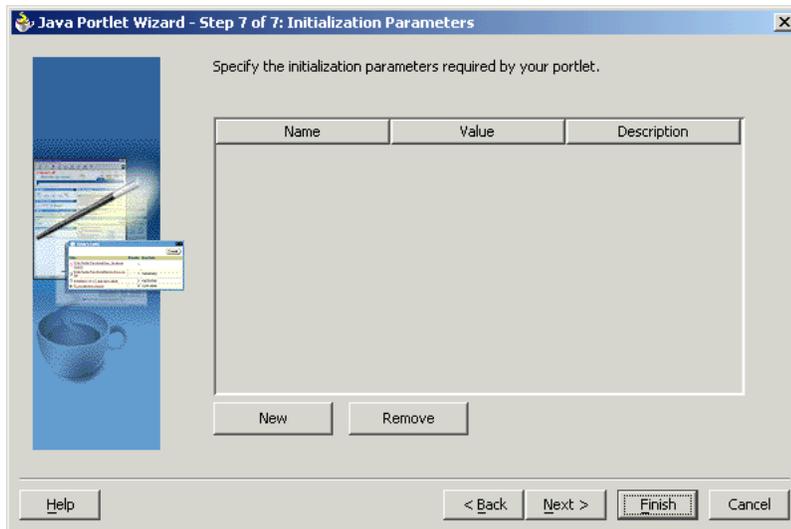
Figure 6–25 Caching Page



23. Click **Next**.

24. On the Initialization Parameters page, shown in [Figure 6–26](#), you can add any required initialization parameters for the portlet. Initialization parameters provide the Web application developer, who decides what goes into the .war file, an alternative to JNDI variables for configuring the behavior of all of the different components of the Web application (for example, servlets and portlets) in a compatible way. For more information on initialization parameters, refer to the Java Portlet Specification. For this example, no initialization parameters are needed.

Figure 6–26 Initialization Parameters Page

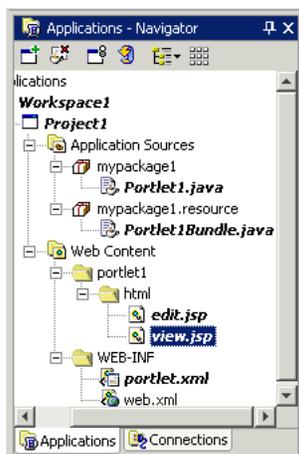


25. Click **Next**.

26. Click **Finish** to generate the files for your portlet. In this case, the following files should be generated for your project node in the Application Navigator (see [Figure 6–27](#)):

- Generated code for each View mode, assuming that you selected **Generate JSP** on the Content Types and Portlet Modes page. If you selected **Custom Code** instead, that code will reside in the portlet's Java class.
- Two Java classes
- `portlet.xml`
- `web.xml`

Figure 6–27 Application Navigator



6.4.2.2 Adding Portlet Logic

After you create the default implementation, you can extend the sample code with your own business logic to implement the desired functionality and features. Refer to the JavaDoc or JPS for more information on adding functionality and features. For this example, you do not need to perform this step and can proceed directly to the deployment procedure.

6.4.2.3 Deploying Your Portlet to an Application Server

After you finish the wizard and successfully generate your portlet, you are ready to deploy it to an application server. Because you chose to create a JPS-compliant portlet, you can deploy it using the wizard for any vendor's JPS-compliant container. The following sections describe how to deploy a JPS-compliant portlet to Oracle's WSRP container running on Oracle Application Server Containers for J2EE:

- [Creating a Connection to Your Application Server](#)
- [Deploying the WAR File](#)

6.4.2.3.1 Creating a Connection to Your Application Server Before you deploy your WAR file, you must establish a connection to whatever application server you are using.

- [Connecting to OC4J in the Oracle Application Server](#)
- [Connecting to OC4J Standalone](#)

Connecting to OC4J in the Oracle Application Server

To establish a connection to OC4J in the Oracle Application Server:

1. In Oracle JDeveloper, open the project you created in the previous sections when you built a portlet.

2. In the navigator, click the **Connections** tab.
3. Right-click the **Connections** node and choose **New Application Server Connection**. Complete the wizard that displays as follows:
 - a. If the Welcome page appears, click **Next**. If you do not want the Welcome page to appear in future, select **Skip this Page Next Time**.
 - b. Enter a meaningful name for the connection, for example, `PDKStandardsOC4JAS`, and choose **Oracle Application Server 10g** as the connection type.
 - c. Click **Next**.
 - d. Enter the Application Server Control Console administrator's user name (for example, `ias_admin`) and password for the relevant middle tier.
 - e. Click **Next**.
 - f. Enter the information in [Table 6-6](#).

Table 6-6 Settings for New OC4J Oracle Application Server Connection

Setting	Value
Enterprise Manager OC4J Host Name	The host name for the Application Server Control Console as specified in <code>MID_TIER_ORACLE_HOME/install/setupifo.txt</code> .
Enterprise Manager OC4J HTTP Port	The port number for the Application Server Control Console as specified in <code>MID_TIER_ORACLE_HOME/install/setupifo.txt</code> .
Remote Server's Oracle Home Directory	The Oracle Application Server home directory.
OC4J Instance Name (optional)	The name you gave to the OC4J instance (for example, <code>home</code> or <code>OC4J_Portal</code>).

- g. Click **Next**.
- h. Enter the RMI details for the EJB client connection (server URL, username, and password). All of these values are configured in the Application Server Control Console. Note that you only need to fill out this page of the wizard if you are using EJBs in your application. Otherwise, you can skip this step.
- i. Verify the connection details by clicking **Test Connection**. A success message should appear if everything is correct. If the test fails, you may need to revise your connection information.
- j. Click **Finish**.

Connecting to OC4J Standalone

To establish a connection to your OC4J standalone, perform the following steps:

1. In Oracle JDeveloper, open the project you created in the previous sections when you built a portlet.
2. In the navigator, click the **Connections** tab.
3. Right-click the **Connections** node and choose **New Application Server Connection**. Complete the wizard that displays as follows:
 - a. If the Welcome page appears, click **Next**. If you do not want the Welcome page to appear in future, select **Skip this Page Next Time**.

- b. Enter a meaningful name for the connection, for example, `PDKStandardsOC4J`, and choose **Standalone OC4J** as the connection type.
- c. Click **Next**.
- d. Enter the administrator's user name and password. This password was set during the installation of the PDK Standards OC4J.
- e. Click **Next**.
- f. Enter the information in [Table 6-7](#).

Table 6-7 Settings for New OC4J Standalone Connection

Setting	Value
URL	Enter the full RMI URL for this setting. For example: <code>ormi://my.machine.com:23791/</code> The RMI port number may be found in: <code>OC4J_HOME/j2ee/home/config/rmi.xml</code>
Target Web Site	Enter the name of the target Web site containing your deployed J2EE application files. For this example, you can accept the default value, <code>http-web-site</code> .
Local Directory Where <code>admin.jar</code> for OC4J Is Installed	Enter the path to the local <code>admin.jar</code> . For example: <code>OC4J_HOME\j2ee\home</code>

- g. Click **Next**.
- h. Verify the connection details by clicking **Test Connection**. A success message should appear if everything is correct. If the test fails, you may need to revise your connection information.
- i. Click **Finish**.

6.4.2.3.2 Deploying the WAR File To create and deploy a WAR file, perform the following steps:

1. Go to the **Application Navigator**.
2. In your current project, right-click `web.xml` and choose **Create WAR Deployment Profile**.
3. In the Save Deployment Profile dialog box, change the name to something meaningful (for example, `jsrportlet1.deploy`).
4. Click **OK**.
5. In the Deployment Profile Properties dialog box, perform the following steps:
 - a. Click **Specify J2EE Web Context Root** and enter `my-portlet` in the adjacent field.
 - b. Click **OK**.
6. Right-click the deployment profile (for example, `jsrportlet1.deploy`) and choose **Deploy to >** the application server connection (for example, `PDKStandardsOC4J`).
7. When the Deployment Finished message displays in the **Deployment Log** at the bottom of Oracle JDeveloper, verify that no errors occurred.

8. If you are using an OC4J standalone instance, you can take the URL provided in the log (for example, `http://myserver.com:8888/my-portlet2`) and append `/portlets?WSDL` to construct the URL you use to register your JPS-compliant portlet with OracleAS Portal. For example:

```
http://myserver.com:8888/my-portlet/portlets?WSDL
```

Note: In some cases, you may get a message in the log stating that Oracle JDeveloper was unable to determine the HTTP port number of the remote server. Typically, you can determine the port number yourself by looking at the URL that takes you to your Oracle Application Server Containers for J2EE home page (for example, `http://myserver.com:8888`).

If you are using OC4J in the Oracle Application Server, you must construct the registration URL yourself as follows:

```
http://host:port/context-root/portlets?WSDL
```

where *host* is the Oracle Application Server home directory.

port is the OracleAS Web Cache HTTP Listener port from the Ports tab of the Application Server Control Console main page.

context-root is the Web Application's Context Root, which is found in the WAR Deployment Profile Properties under General.

9. You should now register your producer and view your portlet. Refer to [Section 6.4.2.4, "Registering and Viewing Your Portlet"](#).

When you redeploy your portlets to the portlet container, all existing sessions between the producer and all of its consumers are lost. If a consumer tries to reuse an existing producer session, it may receive an error message the first time it tries to contact the producer after redeployment.

```
Error: Could not get markup. The cookie or session is invalid or there is a runtime exception.
```

To re-establish the producer's session, refresh the portal page. You won't see this error message if you are re-accessing the portlet from a new browser session because it automatically establishes a new producer session.

6.4.2.4 Registering and Viewing Your Portlet

After you've created and deployed the provider and its portlet(s), you must register the provider with OracleAS Portal. Registering your provider gives OracleAS Portal the information it needs to locate and communicate with your provider. After you register a provider, the provider and its portlets become available in the Portlet Repository. They are also listed in the OracleAS Portal Navigator.

² The examples in this chapter typically use a port of 8888, which is the default port. Of course, you may choose to use different port numbers in your own installation.

Note: When you build portlets and providers with built-in tools, such as the Portlet Builder, OracleAS Portal automatically registers the provider for you. Once you've created your portlet, it automatically displays in the Portlet Repository. OracleAS Portal also offers built-in portlets that are contained in a pre-configured provider. For example, OmniPortlet and Web Clipping are portlets that you can use out of the box, and are already registered with OracleAS Portal. You can view these portlets in the Add Portlets list. However, if you build the portlets and providers programmatically, you must then register these providers to make them available to the portal user.

To register providers for your standards-based portlets, do the following:

1. Open OracleAS Portal and log in. Note that to register your provider, you need to have Manage or Edit privileges on providers. If you do not have these privileges, you need to request them from your administrator.

Note: If you do not want to install OracleAS Portal but you still need to test your portlets, you may want to use the OracleAS Portal Verification Service on OTN to validate your WSRP producers:

<http://portalstandards.oracle.com/>

2. If you are not already on the Portal Builder page, click **Builder** in the upper right corner.
3. Click the **Administer** tab.
4. Click the **Portlets** subtab.
5. In the Remote Providers portlet, click **Register a Provider**.
6. On the Register Provider page, shown in [Figure 6–28](#), enter the values as described in [Table 6–8](#).

Table 6–8 Register Provider Page Values

Setting	Value
Name	<i>your_name</i> Provider
Display Name	<i>your_name</i> Provider
Timeout	100
Timeout Message	The <i>your_name</i> Provider has timed out!
Implementation Style	WSRP

Note: If a provider is unavailable for some reason, it can slow down the rendering of pages that contain portlets from that provider. By default, OracleAS Portal waits until all portlets are returned before completing the page assembly. To avoid delays, you can set a time limit via the Page Assembly Timeout on the Main tab of the page properties. If OracleAS Portal cannot retrieve the portlet from the provider within the specified timeout period, it will render the page without the portlet. If, at a later time, the provider becomes available, OracleAS Portal refreshes the page, adding the missing portlets. In this way, page rendering is never halted due to the unavailability of a particular provider. For more information on the Page Assembly Timeout, refer to the *Oracle Application Server Portal User's Guide*.

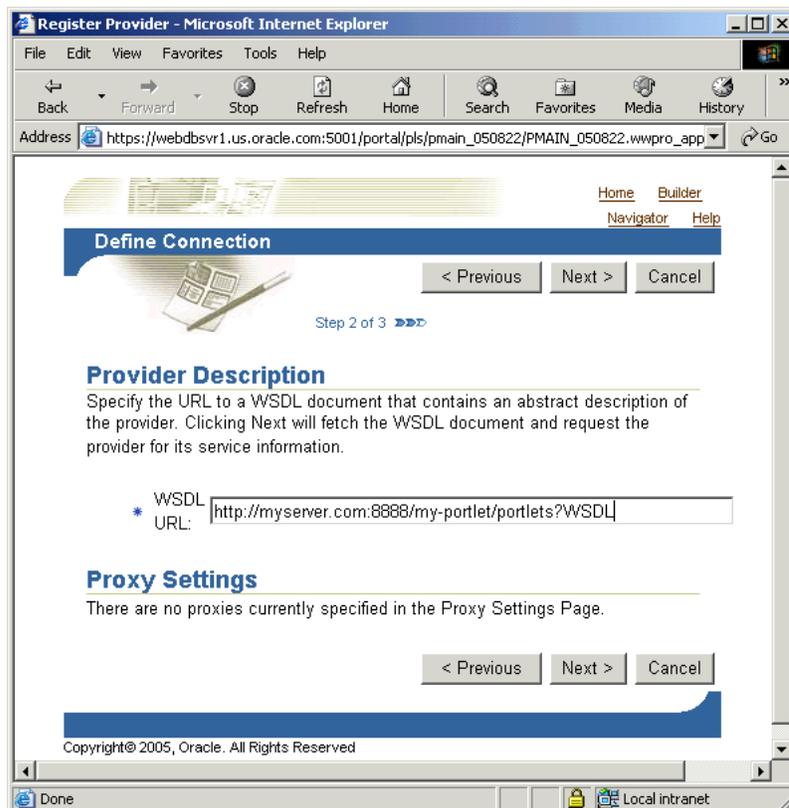
Figure 6–28 Register Provider Page

The screenshot shows a web browser window titled "Register Provider - Microsoft Internet Explorer". The address bar contains the URL "https://webdbsvr1.us.oracle.com:5001/portal/pls/pmain_050822/PMAIN_050822.wwwpro_app". The page has a blue header with "Register Provider" and navigation links for "Home", "Builder", "Navigator", and "Help". Below the header, there are "Next >" and "Cancel" buttons. The main content area is titled "Step 1 of 2" and "Provider Information". It contains a text box for "Name" with "FrankProvider", a "Display Name" field with "Frank Provider", a "Timeout" field with "100" and "seconds", a "Timeout Message" field with "The Frank Provider has timed out.", and an "Implementation Style" dropdown menu set to "WSRP". At the bottom, there are "Next >" and "Cancel" buttons, and a footer with "Copyright© 2005, Oracle. All Rights Reserved".

7. Click **Next**.
8. On the Define Connection page, shown in [Figure 6–29](#), enter the WSDL URL for your provider in the **WSDL URL** field. This URL is the one that you created in step 8 of [Section 6.4.2.3.2, "Deploying the WAR File"](#). For example:

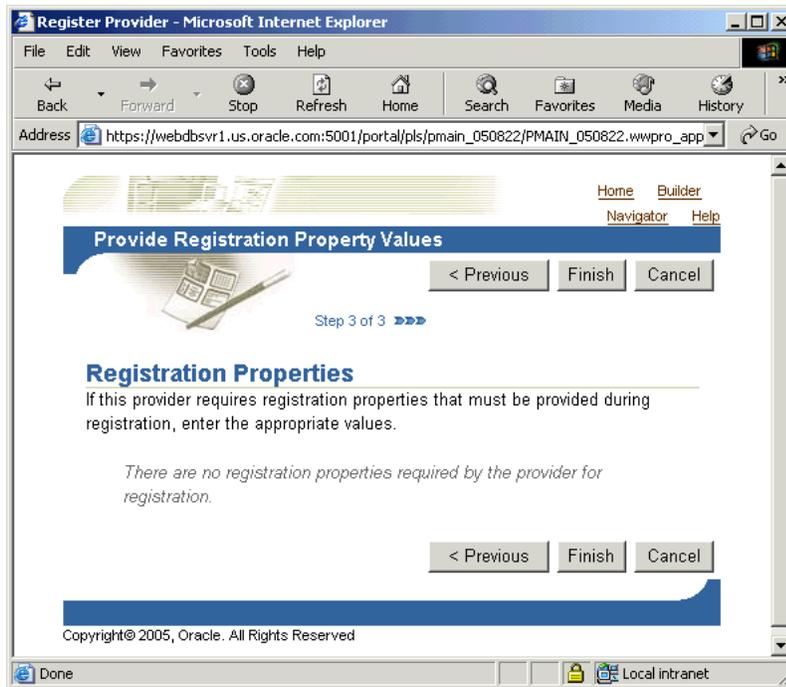
```
http://myserver.com:8888/my-portlet/portlets?WSDL
```

Figure 6–29 Define Connection Page



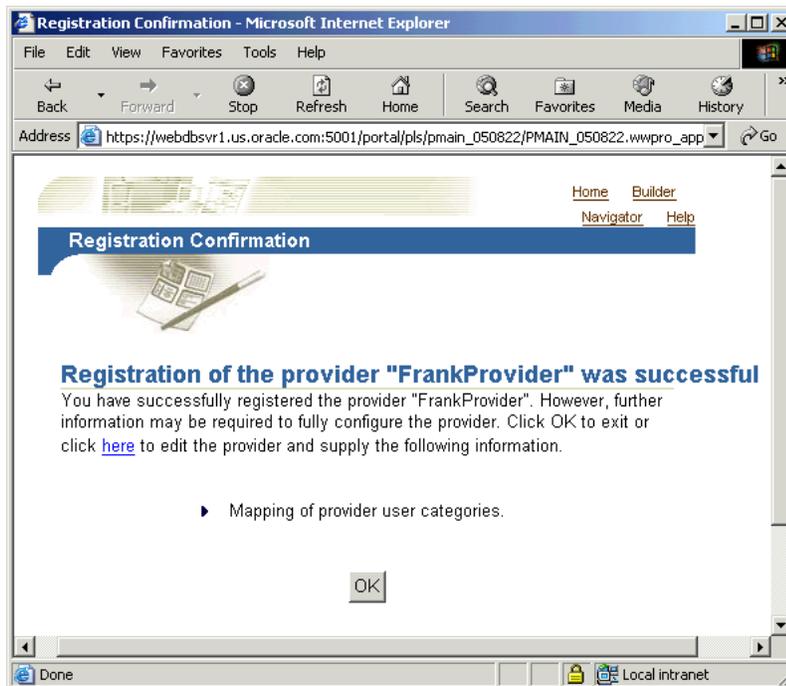
9. Click **Next**.
10. On the Portal Registration Property Values page, shown in Figure 6–30, you fill in any registration properties required by the provider. If there are none, you can proceed to the next step.

Figure 6–30 Provider Registration Property Values Page



11. Click **Finish**. You should see a Registration Confirmation page similar to the one in Figure 6–31.

Figure 6–31 Registration Confirmation Page



6.4.2.4.1 Adding Your Portlet Your portlet should now be available for adding to pages like any other portlet in the Portlet Repository. To add your portlet to a page, follow the instructions in the *Oracle Application Server Portal User's Guide*.

6.5 Introduction to PDK-Java

PDK-Java gives you a framework to simplify the development of Java portlets by providing commonly required utilities and allowing you to leverage existing development skills and application components such as JSPs, servlets, and static HTML pages. PDK-Java also enables you to create portlets without having to deal directly with the complexity of communications between OracleAS Portal and providers.

The PDK-Java framework is divided into the following areas:

- The **Provider Adapter** insulates the developer from the HTTP syntax defined by OracleAS Portal for communication with Web providers. It translates the information passed between OracleAS Portal and your Java Web provider. Without an adapter, your provider would not only manage portlets, but it would also have to communicate this information directly to OracleAS Portal in the expected language. The adapter eliminates the need for your Web provider to understand the portal language and vice-versa.
- The **Provider Interface** defines the APIs (functions) required by your Java implementation to integrate with the Provider Adapter. The Provider Adapter receives messages from the portal, translates them into calls to the Provider Interface, and translates the provider's response into a format that the portal can understand. The Provider Interface contains a set of Java classes that define the methods your provider needs to implement and, in many cases, provides a standard implementation. Some of the primary classes are:
 - ProviderDefinition (oracle.portal.provider.v2.ProviderDefinition)
 - ProviderInstance (oracle.portal.provider.v2.ProviderInstance)
 - PortletDefinition (oracle.portal.provider.v2.PortletDefinition)
 - PortletInstance (oracle.portal.provider.v2.PortletInstance)
 - ParameterDefinition (oracle.portal.provider.v2.ParameterDefinition)
 - EventDefinition (oracle.portal.provider.v2.EventDefinition)
- The **Provider Runtime** provides a base implementation that follows the specification of the Provider Interface. The Provider Runtime includes a set of default classes that implement each one of the Provider Interfaces and allows you to leverage the rendering, personalization, and security frameworks provided with PDK-Java. These classes and the associated frameworks simplify the development of a provider by implementing common functions for OracleAS Portal requests and providing a declarative mechanism for configuring the provider. Using the Provider Runtime, you can focus your development efforts on the portlets themselves rather than the infrastructure needed to communicate with the portal. If the standard behavior of the Provider Runtime does not meet your requirements, you can easily extend or override specific behaviors. Some of the primary classes are:
 - DefaultProviderDefinition
(oracle.portal.provider.v2.DefaultProviderDefinition)
 - DefaultProviderInstance (oracle.portal.provider.v2.DefaultProviderInstance)
 - DefaultPortletDefinition (oracle.portal.provider.v2.DefaultPortletDefinition)
 - DefaultPortletInstance (oracle.portal.provider.v2.DefaultPortletInstance)
 - PortletRenderer (oracle.portal.provider.v2.render.PortletRenderer)

- `PortletPersonalizationManager`
(`oracle.portal.provider.v2.personalize.PortletPersonalizationManager`)
- `PortletSecurityManager`
(`oracle.portal.provider.v1.http.DefaultSecurityManager`)
- The **Provider Utilities** provide methods for simplifying the rendering of portlets. The utilities include methods for constructing valid links (`hrefs`), rendering the portlet's container (including the header), rendering HTML forms that work within a portal page, and supporting portlet caching.

6.6 Building PDK-Java Portlets with Oracle JDeveloper

Using a convenient download from OTN, you can add extensions to Oracle JDeveloper for building portlets. To use this extension, perform the steps in the following procedures:

- [Installing the Portal Extension for Oracle JDeveloper](#)
- [Building PDK-Java Portlets](#)

This section assumes the following:

- You are familiar with portlet terminology such as portlet Show modes. Refer to [Chapter 1, "Understanding Portlets"](#) and [Section 6.1, "Guidelines for Creating Java Portlets"](#).
- You are already familiar with Oracle JDeveloper and know how to build and deploy Java components using it. You can download Oracle JDeveloper from OTN. Visit the Oracle JDeveloper page on OTN:

<http://www.oracle.com/technology/products/jdev/index.html>

6.6.1 Installing the Portal Extension for Oracle JDeveloper

For instructions on how to install the Portal Extension for Oracle JDeveloper, refer to [Section 6.4.1, "Installing the Portal Extension for Oracle JDeveloper"](#).

6.6.2 Building PDK-Java Portlets

Once you have successfully installed the Portal Extension for Oracle JDeveloper, you can begin your portlet development quickly and easily with Oracle JDeveloper:

- [Creating a Portlet and Provider](#): Use the Portlet Wizard to create your basic portlet code and the necessary configuration files for the provider framework.
- [Adding Portlet Logic](#): Extend the example code with your own business logic.
- [Validating Your Portlet and Provider](#): Using the built-in J2EE server of Oracle JDeveloper, you can validate the configuration of your provider and its portlets.
- [Deploying to an Application Server](#): Use Oracle JDeveloper to deploy your application to your application server.
- [Registering and Viewing Your Portlet](#): Register and view your portlet with your local OracleAS Portal instance.

6.6.2.1 Creating a Portlet and Provider

This section walks you through the Portlet Wizard. You can choose which portlet Show modes you want to implement and the implementation method (JSP, HTTP servlet,

Java class, or HTML). The wizard then creates a simple sample implementation for each of the selected modes.

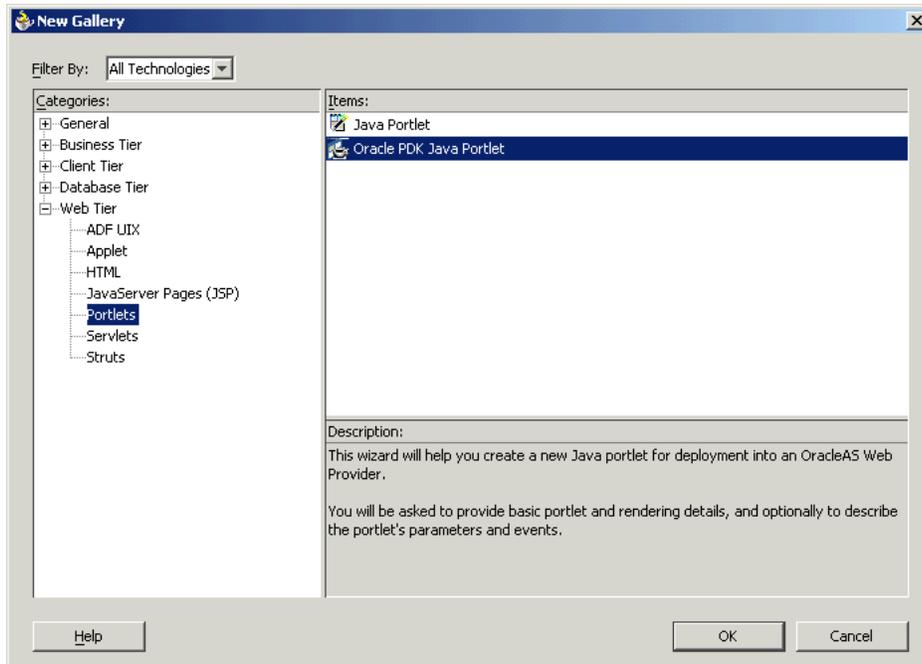
1. After you open Oracle JDeveloper, click the workspace where you want to create this project. If you do not have a workspace, you can create one as follows:
 - a. Right-click the **Applications** node in the Application Navigator and choose **New**.
 - b. Choose **Workspace** from the Items list in the New Gallery dialog box.
 - c. Click **OK**.
 - d. Enter a **Workspace Name** and **Directory Name**, and clear **Add a New Empty Project** in the Create Workspace dialog box.
 - e. Click **OK**.
2. Right-click the name of the workspace in the Application Navigator and choose **New Project**.
3. Click **Empty Project** in the Items list in the New Gallery dialog box.
4. Click **OK**.
5. Enter the **Project Name** and **Directory Name** in the Create Project dialog box.
6. Click **OK**.
7. Right-click your project and select **New**.
8. In the Categories list, expand the Web Tier category and click **Portlets**.

Note: If you cannot find **Portlets**, refer to [Section 6.4.1, "Installing the Portal Extension for Oracle JDeveloper"](#) to ensure that you have installed the extension correctly.

9. In the Items list, click **Oracle PDK Java Portlet**.

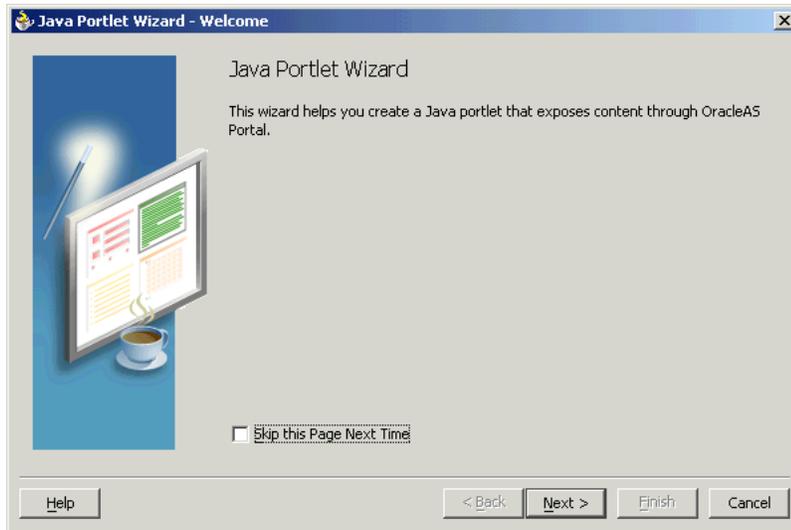
Note: Clicking **Java Portlet** will open the Portlet Wizard for creating JPS-compliant portlets. Clicking **Oracle PDK Java Portlet** will open the Portlet Wizard for creating PDK-Java portlets.

Figure 6–32 New Gallery Dialog Box for Oracle PDK Java Portlet



10. Click **OK**. The Portlet Wizard displays.
11. If you are on the Welcome page of the wizard, click **Next**.

Figure 6–33 Welcome Page



12. On the Portlet Description page, shown in [Figure 6–34](#), enter the names, description, and timeout settings. For this example, you can accept the default values on this page.

Figure 6–34 Portlet Description Page

Java Portlet Wizard - Step 1 of 7: Portlet Description

Provide the following basic information about your new portlet.

Naming information.

Portlet Name: MyPortlet

Display Name: My Portlet

Description: My Portlet Description

Timeout information.

Timeout (seconds): 40

Timeout message: My Portlet timed out

Help < Back Next > Finish Cancel

13. Click **Next**.

14. The next few pages of the wizard enable you to define the portlet modes for this portlet. The Show Modes page, shown in [Figure 6–35](#), enables you to choose the implementation style for the Show page and whether you want to implement Show details page:

- a. **Show page** is selected by default. Choose an **Implementation style** from the list. For the purposes of this example, choose **JSP**. Enter the **File name** for the JSP to be generated by the Portlet Wizard. For this example, you may accept the default file name.
- b. If your portlet requires a details page, select Show details page and enter the **Implementation style** and **File name** as appropriate. In this example, you do not need Show details.

Figure 6–35 Show Modes Page

Java Portlet Wizard - Step 2 of 7: Show Modes

Provide information about your portlet's shared and full screen modes.

Show page

Implementation style: JSP

Package name: mypackage1

Class name:

File name: MyPortletShowPage.jsp

Show details page

Implementation style: JSP

Package name: mypackage1

Class name:

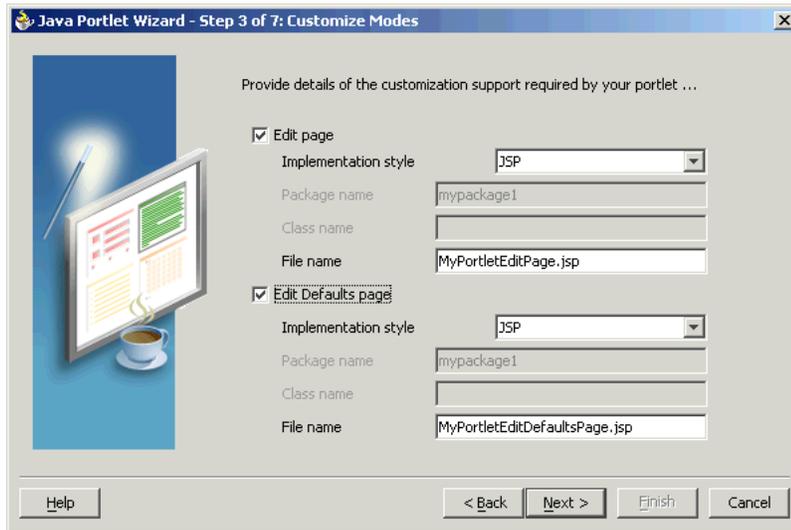
File name: MyPortletShowDetailsPage.jsp

Help < Back Next > Finish Cancel

15. Click **Next**.

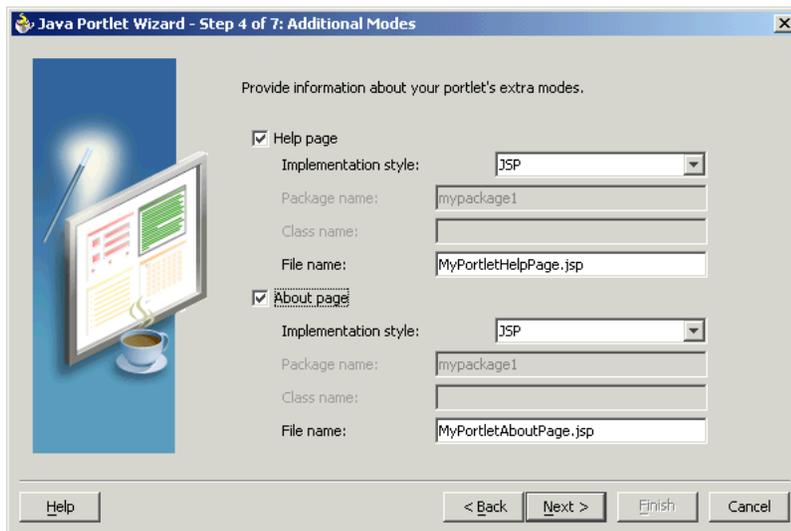
16. On the Customize Modes page, shown in [Figure 6–36](#), **Edit page** should already be selected. For this example, choose an **Implementation style of JSP** and accept the default **File name**.
17. Select **Edit Defaults page** and, for this example, choose an **Implementation style of JSP** and accept the default **File name**.

Figure 6–36 Customize Modes Page



18. Click **Next**.
19. On the Additional Modes page, shown in [Figure 6–37](#), nothing is selected by default. For this example, select **Help page**, choose an **Implementation style of JSP**, and accept the default **File name**.
20. Select **About page**, choose an **Implementation style of JSP**, and accept the default **File name**.

Figure 6–37 Additional Modes Page

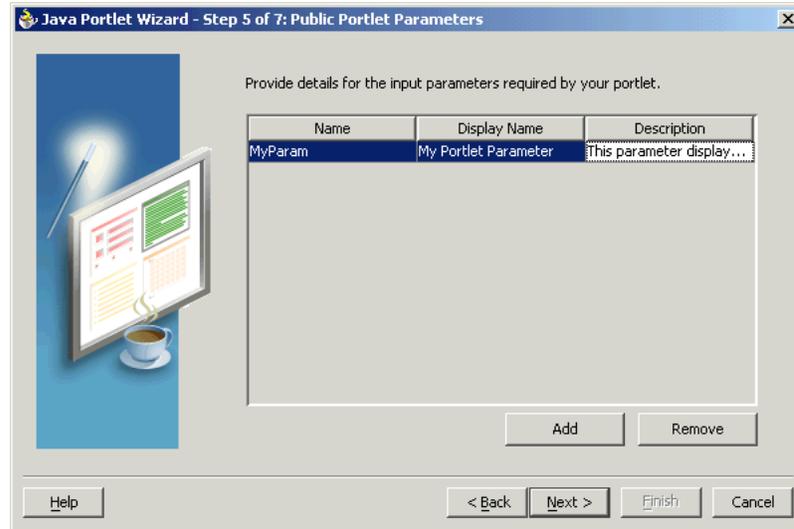


21. Click **Next**.

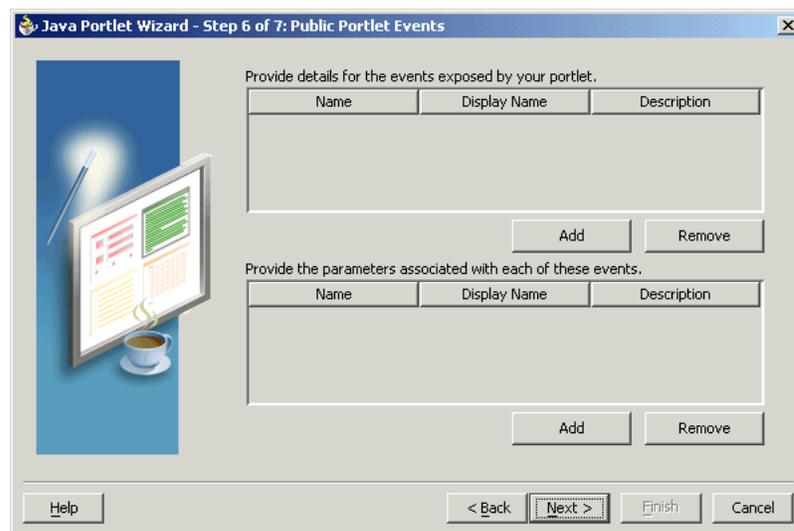
22. On the Public Portlet Parameters page, shown in [Figure 6–38](#), click **Add**.
23. Enter the values as described in [Table 6–9](#) and shown in [Figure 6–38](#).

Table 6–9 Public Portlet Parameter

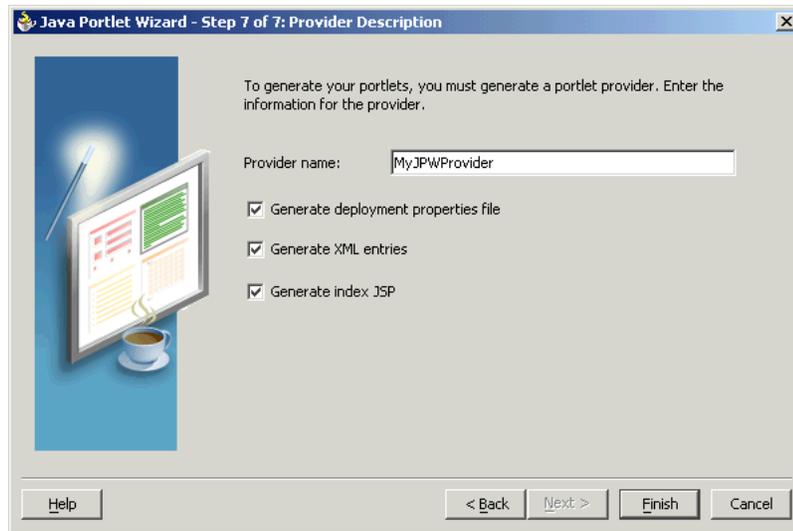
Name	Display Name	Description
MyParam	My Portlet Parameter	This parameter displays a value.

Figure 6–38 Public Portlet Parameters Page

24. Click **Next**.
25. On the Public Portlet Events page, shown in [Figure 6–39](#), you can map parameters to events. For this example, leave this page empty and click **Next**.

Figure 6–39 Public Portlet Events Page

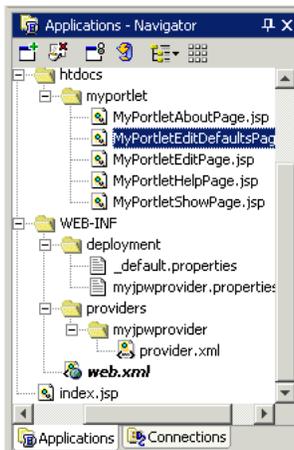
26. On the Provider Description page, shown in [Figure 6–40](#), enter `MyJPWProvider` as the **Provider name**. Ensure that all of the check boxes are selected.

Figure 6–40 Provider Description Page

27. Click **Finish** to generate the files for your portlet. In this case, the following files should be generated for your project in the Application Navigator (see [Figure 6–41](#)):

- Files for each portlet mode you selected.
- `provider.xml`
- `web.xml`
- `index.jsp`
- `_default.properties`
- `myjpwprovider.properties`

All of the above files are required to deploy and run the portlet successfully, except for `index.jsp`, which is used by Oracle JDeveloper for testing purposes.

Figure 6–41 Application Navigator

6.6.2.2 Adding Portlet Logic

After you create the default implementation, you can extend the sample code with your business logic to implement the desired functionality and features. For this example, you do not need to perform this step and can proceed directly to the testing and registration procedures.

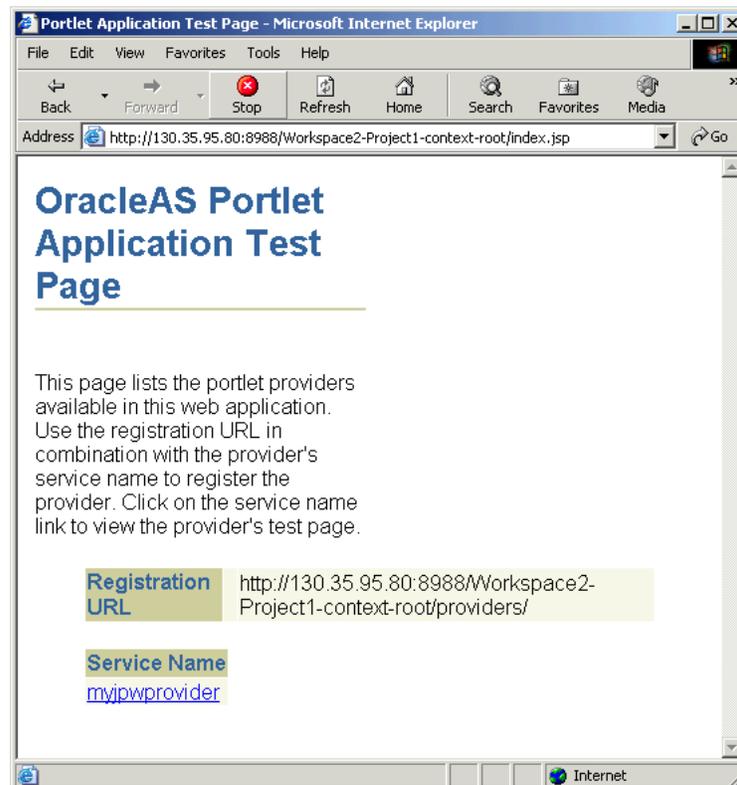
6.6.2.3 Validating Your Portlet and Provider

After you have built your portlet, you need to check the configuration to ensure that the portlet and its provider operate correctly.

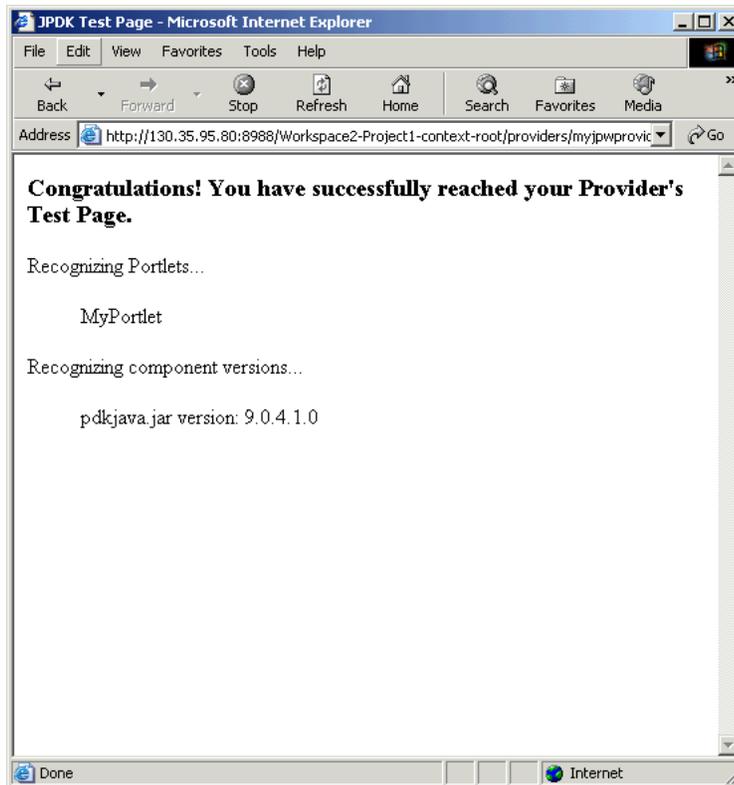
Note: This procedure is for testing purposes only. After this procedure, you still need to register your provider as described in [Section 6.6.2.5, "Registering and Viewing Your Portlet"](#). For development and production, you should always deploy your portlet to an application server as described in [Section 6.6.2.4, "Deploying to an Application Server"](#).

1. In Oracle JDeveloper, open the project you created in the previous sections.
2. Find the `index.jsp` file for your portlet in the Navigator, right-click it, choose **Run**. Your browser should open with a page similar to the one shown in [Figure 6-42](#).

Figure 6-42 Portlet Application Test Page



3. Click the link underneath Service Name. Your browser should open with a page similar to the one shown in [Figure 6-43](#). Note that you need the URL from this page to register your provider, which is the next task.

Figure 6–43 Provider Test Page

6.6.2.4 Deploying to an Application Server

After you finish the wizard and successfully generate your portlet, you are ready to deploy it to an application server, Oracle Application Server Containers for J2EE. The following sections describe how to deploy a portlet to Oracle Application Server Containers for J2EE:

- [Creating a Connection to Oracle Application Server Containers for J2EE](#)
- [Deploying the WAR File](#)

6.6.2.4.1 Creating a Connection to Oracle Application Server Containers for J2EE To establish a connection to your application server, perform the following steps:

Note: The steps that follow describe the procedure for deploying to a standalone instance of Oracle Application Server Containers for J2EE. For information about deploying to a full Oracle Application Server instance, please refer to the Oracle JDeveloper online Help system.

1. If it is not still open, start Oracle JDeveloper and open the project you created in [Section 6.6.2.1, "Creating a Portlet and Provider"](#).
2. In the Navigator, right-click **Connections** and choose **New Application Server Connection**. Complete the wizard as follows:
 - a. If the Welcome page appears, click **Next**. If you do not want the Welcome page to appear in future, be sure to select **Skip this Page Next Time**.

- b. Enter a meaningful name for the connection, for example, `PDKJavaOC4J`, and choose **Standalone OC4J** as the connection type.
- c. Click **Next**.
- d. Enter the administrator's user name and password. This password was set during the installation of the Oracle Application Server Containers for J2EE.
- e. Click **Next**.
- f. Enter the information in [Table 6–10](#).

Table 6–10 Settings for New Application Server Connection

Setting	Value
URL	Enter the full RMI URL for this setting. For example: <code>ormi://my.machine.com:23791/</code> The RMI port number may be found in: <code>OC4J_HOME/j2ee/home/config/rmi.xml</code>
Target Web Site	Enter the name of the target Web site containing your deployed J2EE application files. For the purposes of this example, you can accept the default value, <code>http-web-site</code> .
Local Directory Where <code>admin.jar</code> for OC4J Is Installed	Enter the path to the local <code>admin.jar</code> that is version-compatible with the remote servers specified in the URL setting above. For portlets you plan to deploy to Oracle Application Server Containers for J2EE 9.0.3, you can use the default <code>admin.jar</code> included with Oracle JDeveloper 9.0.3. For portlets you plan to deploy to Oracle Application Server Containers for J2EE 9.0.4, you need to change the default path in this setting to point to an instance of Oracle Application Server Containers for J2EE Release 9.0.4. For example: <code>OC4J_HOME\j2ee\home</code>

- g. Click **Next**.
- h. Verify the connection details by clicking **Test Connection**. A success message should display if everything is correct. If the test fails, you may need to revise your connection information.
- i. Click **Finish**.

6.6.2.4.2 Deploying the WAR File To create and deploy a WAR file, perform the following steps:

1. Right-click your portlet project and choose **New**.
2. In the New dialog box, under Categories, choose **General > Deployment Profiles** and, under Items, choose **WAR File**.
3. In the Create Deployment Profile dialog box, change the name to something meaningful (for example, `myj2eeportlet1.deploy`).
4. Click **OK**.
5. In the Profile Settings dialog box, perform the following steps:
 - a. Click **Specify J2EE Web Context Root** and enter `myj2eeportlet1`.
 - b. In the pane on the left, choose **File Groups > WEB-INF/lib > Contributors**.
 - c. Select **Portlet Development**.

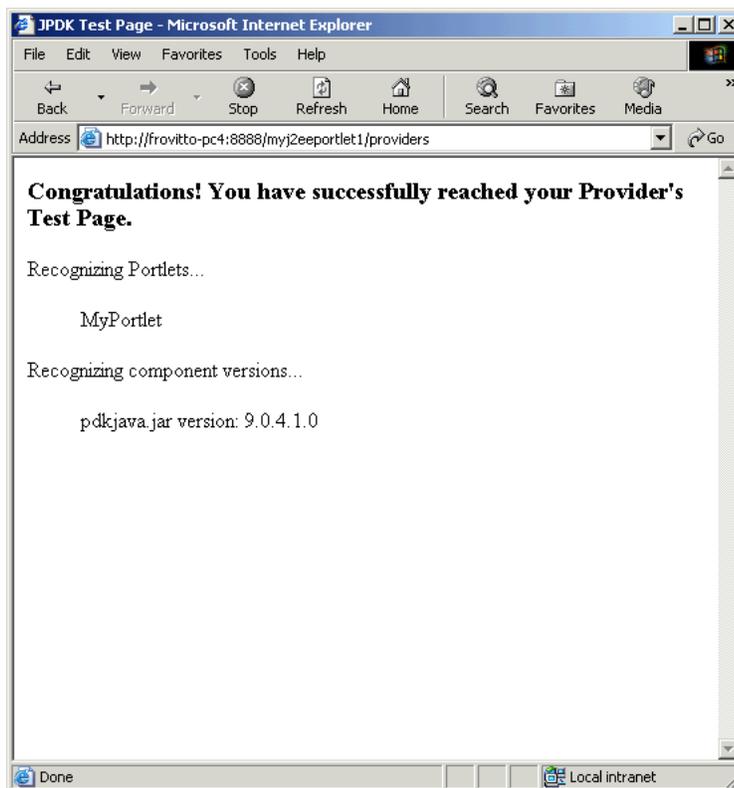
- d. Click **OK**.
6. Choose **File > Save All**.
7. Right-click the deployment profile (for example, `myj2eeportlet1.deploy`) and choose **Deploy to >** the application server connection (for example, `PDKJavaOC4J`).
8. Await the **Deployment Finished** message in the **Deployment Log** at the bottom of Oracle JDeveloper and verify that no errors occurred.
9. Take the URL provided in the **Deployment Log** (for example, `http://myserver.com:8888/myj2eeportlet1`) and append `/providers` to construct the URL you use to test and register your J2EE portlet with OracleAS Portal. For example:

```
http://myserver.com:8888/myj2eeportlet1/providers
```

Note: In some cases, you may get a message in the log stating that Oracle JDeveloper was unable to determine the HTTP port number of the remote server. Typically, you can determine the port number yourself by looking at the URL that takes you to your Oracle Application Server Containers for J2EE home page (for example, `http://myserver.com:8888`).

10. Enter the URL you constructed in the preceding step in your browser. You should see a page similar to the one in [Figure 6–44](#).

Figure 6–44 PDK - Java Test Page for Portlets



6.6.2.5 Registering and Viewing Your Portlet

After you've created and deployed the provider and its portlet(s), you must register the provider with OracleAS Portal. Registering your provider gives OracleAS Portal the information it needs to locate and communicate with your provider. After you register a provider, the provider and its portlets become available in the Portlet Repository. They are also listed in the OracleAS Portal Navigator.

Note: When you build portlets and providers with built-in tools, such as the Portlet Builder, OracleAS Portal automatically registers the provider for you. Once you've created your portlet, it automatically displays in the Portlet Repository. OracleAS Portal also offers built-in portlets that are contained in a pre-configured provider. For example, OmniPortlet and Web Clipping are portlets that you can use out of the box, and are already registered with OracleAS Portal. You can view these portlets in the Add Portlets list. However, if you build the portlets and providers programmatically, you must then register these providers in order to make them available to the portal user.

The following steps describe how to register your provider and add your portlet to pages:

1. Open OracleAS Portal and log in. Note that to register your provider, you need to have Manage or Edit privileges on providers. If you do not have these privileges, you need to request them from your administrator.
2. If you are not already on the Builder page, click **Builder** in the upper right corner.
3. Click the **Administer** tab.
4. Click the **Portlets** sub tab.
5. In the Remote Providers portlet, click **Register a Provider**.
6. On the Provider Information page, shown in [Figure 6-45](#), enter the values as described in [Table 6-11](#).

Table 6-11 Provider Information Page Values

Setting	Value
Name	<i>your_name</i> PDKJProvider
Display Name	<i>your_name</i> PDKJProvider
Timeout	100
Timeout Message	The <i>your_name</i> PDKJProvider has timed out!
Implementation Style	Web

Figure 6–45 Register Provider Page

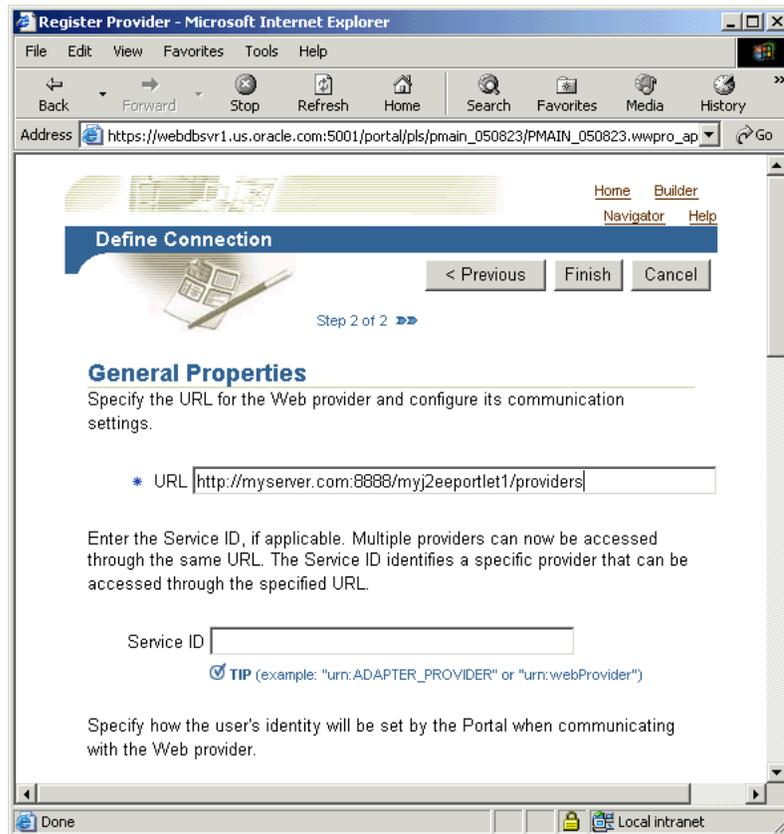
7. Click **Next**.
8. On the Define Connection page, shown in [Figure 6–46](#), enter the URL for your provider in the **URL** field. This URL is the one that you noted at the end of [Section 6.6.2.4.2, "Deploying the WAR File"](#). For example:

```
http://myserver.com:8888/myj2eeportlet1/providers
```

Note: PDK-Java enables you to deploy multiple providers under a single adapter servlet. The providers are identified by the **Service ID** field. When you deploy a new provider, you must assign a service identifier to the provider and use that service identifier when creating your provider WAR file. The service identifier is used to look up a file called `service_id.properties`, which defines the characteristics of the provider, such as whether to display its test page.

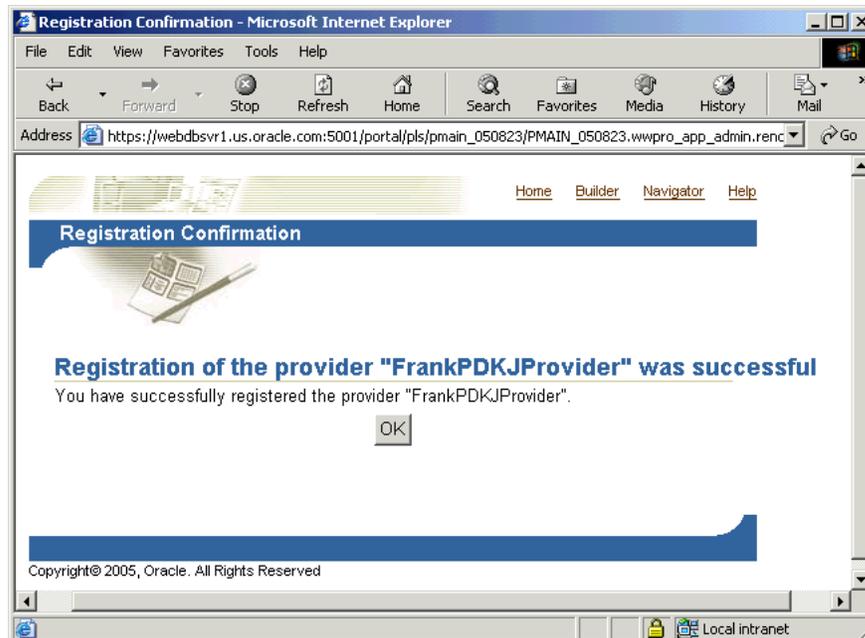
For more information about service identifiers, refer to [Section C.1.2, "Service Identifiers"](#).

Figure 6-46 Define Connection Page



9. Click **Finish**. You should see a Registration Confirmation page similar to the one in Figure 6-47.

Figure 6-47 Registration Confirmation Page



10. Your portlet should now be available for adding to pages just as any other portlet in the Portlet Repository.

6.6.2.5.1 Adding Your Portlet Your portlet should now be available for adding to pages like any other portlet in the Portlet Repository. To add your portlet to a page, follow the instructions in the *Oracle Application Server Portal User's Guide*.

Enhancing Java Portlets

This chapter explains how to enhance Java portlets you created with the Oracle JDeveloper Portal Add-In, and how to make a portlet out of your struts application:

- [Enhancing JPS Portlets](#)
 - [Adding Personalization](#)
- [Enhancing PDK-Java Portlets](#)
 - [Adding Show Modes](#)
 - [Adding Personalization](#)
 - [Passing Parameters and Submitting Events](#)
 - [Accessing Session Information](#)
 - [Implementing Portlet Security](#)
 - [Controlling the Export/Import of Portlet Personalizations](#)
 - [Enhancing Portlet Performance with Caching](#)
 - [Enhancing Portlets for Mobile Devices](#)
 - [Writing Multilingual Portlets](#)
- [Building Struts Portlets with Oracle JDeveloper](#)
 - [OracleAS Portal and the Apache Struts Framework](#)
 - [Creating a Struts Portlet](#)



The source code for many of the examples referenced in this chapter is available as part of PDK-Java. You can download PDK-Java from the OracleAS Portal Developer Kit (PDK) page on OTN:

<http://www.oracle.com/technology/products/ias/portal/pdk.html>

When you unzip PDK-Java, you will find the examples in:

```
../pdk/jpdk/v2/src/oracle/portal/sample/v2/devguide
```

You can find the JavaDoc reference for PDK-Java in:

```
../pdk/jpdk/v2/apidoc
```

7.1 Enhancing JPS Portlets

Once you have built your initial portlet in the Portlet Wizard as described in [Section 6.4.2, "Building JPS-compliant Portlets"](#), you will want to enhance it. Because

JPS portlets adhere to the Java standards, you can find substantial information about enhancing them from many different sources, such as third party books and Web pages. One of the more important enhancements that you might wish to perform is [Adding Personalization](#), which is described in this section.

7.1.1 Adding Personalization

In this section, you enhance the portlet you created in [Section 6.4.2, "Building JPS-compliant Portlets"](#) with some code that allows a user in Edit or Edit Defaults mode to paste HTML into a field for the portlet to render. You will also see how easily you can redeploy a portlet.

7.1.1.1 Assumptions

- You built a portlet using the wizard and successfully added it to a page.

7.1.1.2 Implementing Personalization

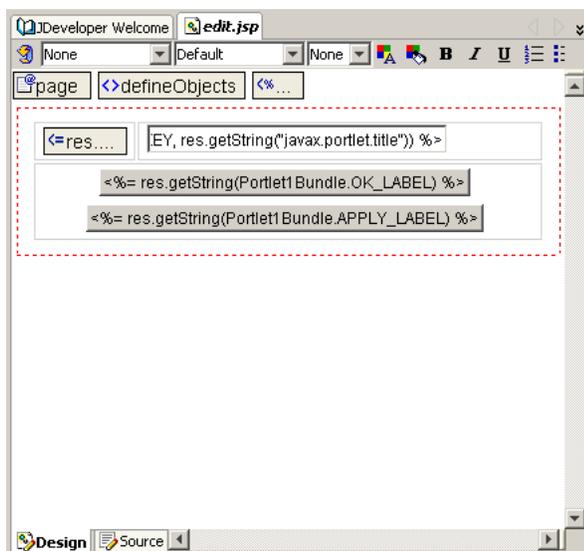
In this section, you add some code to My Java Portlet, redeploy the portlet, and then test it in OracleAS Portal.

1. In Oracle JDeveloper, double-click the `view.jsp` file for your JPS-Standard portlet in the Application Navigator.
2. Add the code that is indicated in bold below:

```
<%@ page contentType="text/html"
import="javax.portlet.* , java.util.* , mypackage1.Portlet1,
mypackage1.resource.Portlet1Bundle"%>
<%@ taglib uri="http://java.sun.com/portlet" prefix="portlet"%>
<portlet:defineObjects/>
<%
PortletPreferences prefs = renderRequest.getPreferences();
%>
<%= prefs.getValue("portletContent", "Portlet Content") %>
```

3. Open `edit.jsp` in the visual designer and click the **Design** tab. Notice that the JSP consists of a form field, a form input field, and two form button fields.

Figure 7-1 *Edit.jsp in the Visual Designer*



4. Add the code that is indicated in bold below to implement a form field called **Content**:

```

<FORM ACTION="<portlet:actionURL/>" METHOD="POST">
<TABLE BORDER="0">
<TR><TD WIDTH="20%">
<P CLASS="portlet-form-field" ALIGN="right">
<%= res.getString(Portlet1Bundle.PORTLETTITLE) %>
</P></TD><TD WIDTH="80%">
<INPUT CLASS="portlet-form-input-field" TYPE="TEXT"
  NAME="<%= Portlet1.PORTLETTITLE_KEY %>"
  VALUE="<%= prefs.getValue(Portlet1.PORTLETTITLE_KEY,
    res.getString("javax.portlet.title")) %>"
  SIZE="20">
</TD></TR>
<tr><td width="20%">
<p class="portlet-form-field" align="right">
Content
</p>
</td><td width="80%">
<textarea rows="10" cols="60" class="portlet-form-input-field"
  name="portletContent"><%= prefs.getValue("portletContent"."Portlet Content"
  %></textarea>
</td></tr>
<TR><TD COLSPAN="2" ALIGN="CENTER">
<INPUT CLASS="portlet-form-button" TYPE="SUBMIT" NAME=
  "<%= Portlet1.OK_ACTION%>"
  VALUE="<%= res.getString(Portlet1Bundle.OK_LABEL) %>">
<INPUT CLASS="portlet-form-button" TYPE="SUBMIT" NAME=
  "<%=Portlet1.APPLY_ACTION %>"
  VALUE="<%= res.getString(Portlet1Bundle.APPLY_LABEL) %>">
</TD></TR>
</TABLE>

```

5. Click the **Design** tab to see the new form field that you just added.
6. Open `WelcomePortlet.java` in the visual editor and insert the following two lines of code (indicated in bold):

```

// Save the preferences.
PortletPreferences prefs = request.getPreferences();
String param = request.getParameter(PORTLETTITLE_KEY);
prefs.setValues(PORTLETTITLE_KEY, buildValueArray(param));
String contentParam = request.getParameter("portletContent");
prefs.setValues("portletContent", buildValueArray(contentParam));
prefs.store();

```

7. Redeploy the portlet. Notice that Oracle JDeveloper automatically saves and compiles the code before deploying the portlet. Refer to [Section 6.4.2.3, "Deploying Your Portlet to an Application Server"](#) for a reminder of how to perform this step.
8. In OracleAS Portal, reload the page that contains the portlet. The portlet displays the text `Portlet Content`, which was one of the changes you made in Oracle JDeveloper.
9. Click the **Customize** link. You can see the new form field that you added in Oracle JDeveloper.
10. Enter the following HTML in the `Content` field, replacing the words `Portlet Content`.

```

<p>Read <em>The Path to Portlet Interoperability</em> by John Edwards in

```

```
<strong>Oracle Magazine</strong>, Nov-Dec 2003. </p>
<p>It discusses JSR 168 and WSRP open portals. </p>
```

11. Click **Apply** and then click **Close**. The HTML is rendered in the portlet.

7.2 Enhancing PDK-Java Portlets

Once you have built your initial portlet in the Portlet Wizard as described in [Section 6.6.2, "Building PDK-Java Portlets"](#), you may perform the following tasks to enhance it:

- [Adding Show Modes](#)
- [Adding Personalization](#)
- [Passing Parameters and Submitting Events](#)
- [Using JNDI Variables](#)
- [Accessing Session Information](#)
- [Implementing Portlet Security](#)
- [Controlling the Export/Import of Portlet Personalizations](#)
- [Enhancing Portlet Performance with Caching](#)
- [Writing Multilingual Portlets](#)

This section assumes the following:

- You are familiar with portlet terminology such as portlet Show modes. Refer to [Chapter 1, "Understanding Portlets"](#) and [Section 6.1, "Guidelines for Creating Java Portlets"](#).
- You have already downloaded and installed the Java Portlet Container and have an Oracle Application Server Containers for J2EE 9.0.4 container to which you may deploy your portlets.
- You are already familiar with Oracle JDeveloper and know how to build and deploy Java components using it. You can download Oracle JDeveloper from OTN. Visit the Oracle JDeveloper page on OTN:

<http://www.oracle.com/technology/products/jdev/index.html>

7.2.1 Adding Show Modes

In the Portlet Wizard, you add Show modes by checking boxes on the wizard pages. Refer to [Section 6.6.2, "Building PDK-Java Portlets"](#) for more information about using the wizard. For each Show mode that you select in the wizard, a basic HelloWorld skeleton is created. If you need to add a Show mode after creating the portlet or you are adding one of the modes (preview or link) not available through the wizard, you can do that manually by updating `provider.xml` and HTML or JSPs in Oracle JDeveloper. The following sections explain how to add Show modes to a PDK-Java portlet:

- [Implementing Extra Show Modes](#)
- [Updating the XML Provider Definition](#)
- [Viewing the Portlet](#)

Once you have completed this section, you will be able to implement any Show mode using `RenderManager` because the principles are the same for all modes. For

example, even though this section does not describe how to implement the Help mode in detail, you will understand how to do it, as the process is the same as for Preview mode, which is described here.

For more detailed information on the PDK runtime classes used in this section, refer to the JavaDoc on OTN:

<http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/jpdk/v2/apidoc/index.html>

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

7.2.1.1 Assumptions

- You built a portlet using the wizard and successfully added it to a page.

7.2.1.2 Implementing Extra Show Modes

Your first task when creating Show modes manually is to create an HTML file or JSP for each mode. For example, if you want to implement Preview mode, you need to create an HTML file to provide preview content.

To create an HTML file to preview content, perform the following steps:

1. In Oracle JDeveloper, open the project that contains your portlets and select the portlet in the Application Navigator to ensure the HTML page is created in the appropriate place.
2. Open Oracle JDeveloper's visual editor and create your HTML page. For example, the following HTML could serve as a preview page:

```
<p>This is the <i>preview</i> mode of your portlet!</p>
```

Once you have created the HTML file for previewing content, you are ready to update the XML provider definition.

7.2.1.3 Updating the XML Provider Definition

When you want to expose additional Show modes you must update your XML provider definition as follows:

- Set a boolean flag that indicates to the PDK Framework that a link or icon to that mode should be rendered.
- Point to the HTML file or JSP that you created for that mode.

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

For example, if you want to render Preview mode, perform the following steps:

1. Edit the provider definition file, `provider.xml` and add the tag to activate Preview mode:

```
<showPreview>true</showPreview>
```

2. Specify the preview page to be the HTML page that you created in [Section 7.2.1.2, "Implementing Extra Show Modes"](#):



```
<previewPage>/htdocs/myportlet/MyPortletPreviewPage.html</previewPage>
```

3. Save the updates to `provider.xml`.
4. Redeploy your portlet. Refer to step 6 in [Section 6.6.2.4.2, "Deploying the WAR File"](#).

When you redeploy, Oracle JDeveloper automatically saves and compiles the code before deploying the portlet.

7.2.1.4 Viewing the Portlet

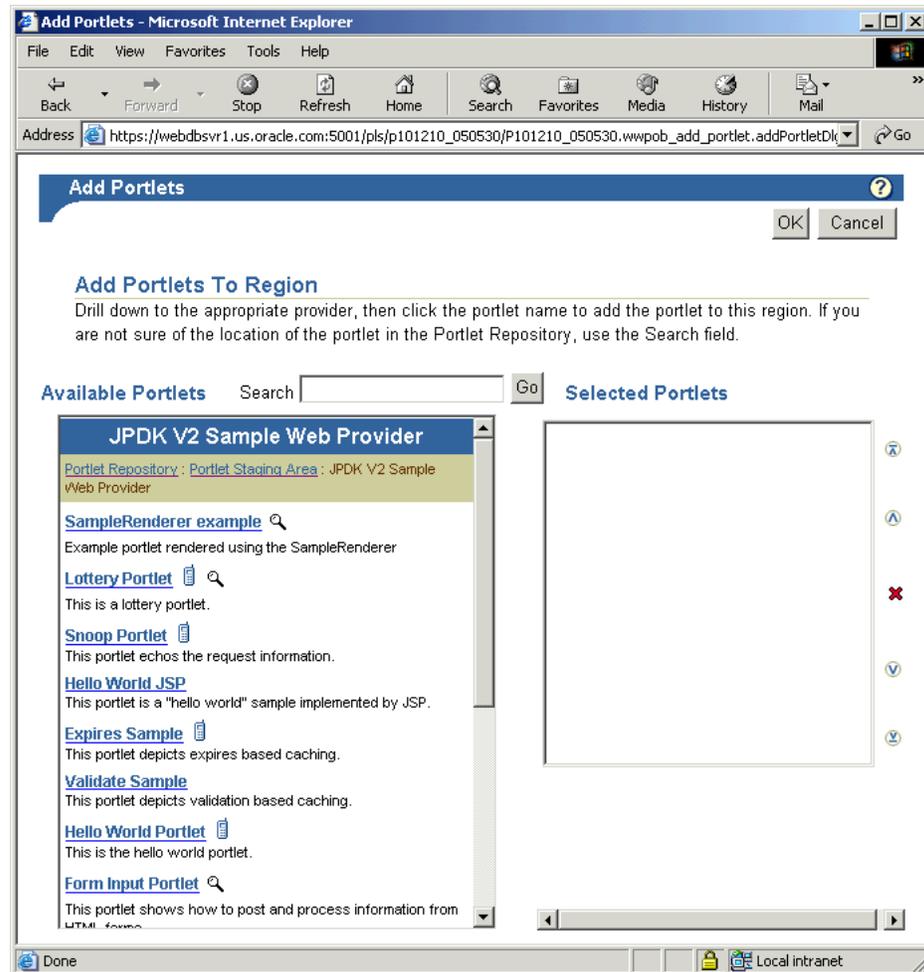
To view the new Show modes, you must ensure that your updated XML provider definition is re-parsed. To do this, perform the following steps:

1. Copy the HTML file you created in [Section 7.2.1.2, "Implementing Extra Show Modes"](#) and `provider.xml` to the Oracle Application Server Containers for J2EE instance where you plan to deploy the portlet.
2. Refresh the provider.
3. Refresh the portal page containing your portlet.

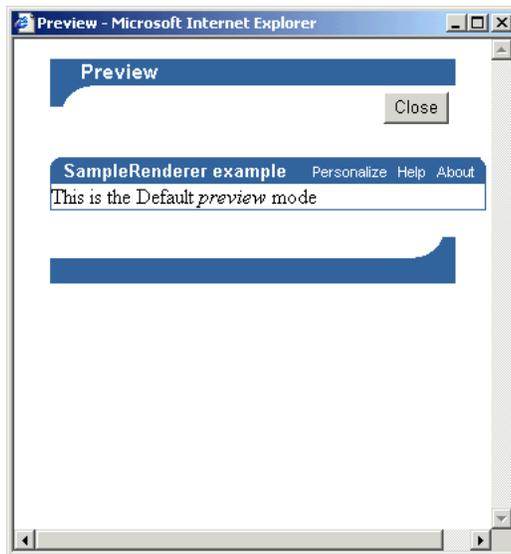
To view Preview mode, do the following:

1. Edit a page or create a new page and choose **Add Portlet**.
2. Navigate to the location of your provider in the Portlet Repository (for example, Portlet Staging Area) and find your portlet. Note the magnifying glass icon next to the portlet shown in [Figure 7-2](#)

Figure 7-2 Add Portlet Page



3. Click the magnifying glass icon next to the portlet and a preview window similar to the one in Figure 7-3 displays.

Figure 7-3 Preview Window

7.2.2 Adding Personalization

In [Section 7.2.1, "Adding Show Modes"](#) you learned how to use the PDK Provider Framework to activate and render additional Show modes that were either not activated when creating the portlet with the wizard or not available through the wizard (such as Link and Preview modes). This section describes the two Personalization modes (Edit and Edit Defaults) in more detail. When selected in the Java Portlet Wizard, Edit page and Edit Defaults page cause the generation of skeleton code for the two Personalization modes. The skeleton code enables you to access the personalization framework with a few lines of code rather than completely hand coding a personalization framework and a data store to hold the values.

To add personalization to your portlet, you need to do the following:

- Update the Edit page of your portlet to set and retrieve personalization changes.
- Update the Edit Defaults page of your portlet to set and retrieve personalization changes.
- Update the Show page of your portlets to use the personalization set by the user.

The Edit and Edit Defaults modes allow portlet users to change a set of customizable parameters supported by the portlet, which typically drive the way the portlet is rendered in other modes. For a particular instance of a portlet on an OracleAS Portal page, the personalizations made in the Edit and Edit Defaults modes apply only to that instance of the portlet.

- **Edit** mode personalizations are specific to the individual user making the personalizations. This mode is activated by clicking the **Personalize** link on the portlet header in show mode.
- **Edit defaults** mode personalizations apply to all users in the same locale who have not yet made specific personalizations to that portlet instance. This mode is generally only available to page designers, and can be activated by following the **Edit** icon on the page.

When rendering Edit and Edit Defaults modes, a `PortletRenderer` can carry out either of these tasks to support the personalization process:

- **Render the Edit Form:** For each of the portlet's customizable parameters, `PortletRenderer` uses a `PortletPersonalizationManager` to retrieve the current value and renders a control in an HTML form so the current value can be edited.
- **Handle Edit Form actions:** When an **OK** or **Apply** button is clicked on the standard edit form header, `PortletRenderer` uses a `PortletPersonalizationManager` to store the personalized parameters submitted by the edit form and redirects the browser to the appropriate portal page.

Therefore, the purpose of the `PortletPersonalizationManager` controller is to enable a `PortletRenderer` to store and retrieve the current values of customizable parameters that apply to a particular portlet instance and user. The PDK Framework uses the abstraction of a `PersonalizationObject` as a container for a set of personalized parameters and a `PortletReference` as the key under which a set of personalizations are stored. Thus, a `PortletPersonalizationManager` is simply a mechanism that allows the storage and retrieval of persisted `PersonalizationObjects` under a given `PortletReference`.

A preference store is a mechanism for storing information like user preference data, portlet/provider settings, or even portlet data, while using OracleAS Portal. The information stored in the preference store is persistent in the sense that, even if you log out and log back in later, you can still access previously saved preferences. The preference store maintains the user preference information and invokes the user preferences whenever the user logs in again. PDK-Java provides the `PrefStorePersonalizationManager`, which uses a `PreferenceStore` implementation to persist personalized data. Currently, PDK-Java has two `PreferenceStore` implementations: `DBPreferenceStore` and `FilePreferenceStore`. The `DBPreferenceStore` persists data using a JDBC compatible relational database and `FilePreferenceStore` persists data using the file system.

For more details of these implementations, consult the JavaDoc:

<http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/jpdk/v2/apidoc/index.html>

Note: PDK-Java provides the Preference Store Migration/Upgrade Utility to help migrate the preference store from a file system to a database and upgrade personalizations from earlier releases. This utility is described more fully on OTN.

<http://www.oracle.com/technology/products/ias/portal/index.html>

To add personalization functionality to your portlet you use `PrefStorePersonalizationManager` in conjunction with `NameValuePersonalizationObject`, that is, the default `PersonalizationObject` implementation. By default, the wizard generates a simple edit form for both the Edit and Edit Defaults modes to enable users to personalize the portlet title. This section describes how to update the existing code to enable portal users to personalize the portlet greeting.

7.2.2.1 Assumptions

1. You have followed through and understood these sections:
 - [Building PDK-Java Portlets](#)

- [Adding Show Modes](#)
2. You built a portlet using the wizard, with **Edit page** and **Edit Defaults page** selected, and successfully added it to a page.

7.2.2.2 Implementing Personalization for Edit and Edit Defaults Pages

The Edit page of your portlet is called when a user personalizes the portlet. By default, the JSP generated by the wizard includes all of the required code to provide personalization of the portlet title. You just need to insert a few lines of code into the Edit page for additional personalization.

7.2.2.2.1 Reviewing the Generated Code The wizard creates the following code for you by default:

```
<%@page contentType="text/html; charset=windows-1252"
    import="oracle.portal.provider.v2.render.PortletRenderRequest"
    import="oracle.portal.provider.v2.http.HttpCommonConstants"
    import="oracle.portal.provider.v2.personalize.NameValuePersonalizationObject"
    import="oracle.portal.provider.v2.render.PortletRendererUtil"
%>

<%
    PortletRenderRequest pReq = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
%>

<P>Hello <%=pReq.getUser().getName() %>.</P>
<P>This is the <b><i>Edit</i></b> render mode!</P>
<%-- This page both displays the personalization
    form and processes it,. Display the form if
    there is no action parameter, process it
    otherwise --%>

<%
    String actionParam = PortletRendererUtil.getEditFormParameter(pReq);
    String action = request.getParameter(actionParam);
    String title = request.getParameter("my2portlet_title");
    NameValuePersonalizationObject data = (NameValuePersonalizationObject)
        PortletRendererUtil.getEditData(pReq);
    // Cancel automatically redirects to the page, so
    // will only receive OK or APPLY
    if (action !=null)
    {
        data.setPortletTitle(title);
        PortletRendererUtil.submitEditData(pReq, data);
        return;
    }

    // Otherwise just render the form.
    title = data.getPortletTitle();
%>
<table border="0">
    <td width="20%">
        <p align="right">Title:</p>
    </td>
    <td width="80%">
        <input type="TEXT" name="my2portlet_title" value="<%= title %>">
    </td>
</table>
```

7.2.2.2 Modifying the Generated Code The JSP contains an input field for the portlet title. This field represents the Personalize page of the portlet where users can update the portlet title.

1. Following the table in the generated code, add a second table containing a text field and a prompt, allowing users to enter a new greeting for the portlet:

```
<table border="0">
  <tr>
    <td width="20%">
      <p align="right">Greeting:</p>
    </td>
    <td width="80%">
      <input type="TEXT" name="myportlet_greeting" value="<%= greeting %>">
    </td>
  </tr>
</table>
```

2. The HTML above simply specifies a field to enter a new greeting on the Edit page. This new greeting is displayed in the portlet's Shared Screen mode. Next, you add a string below `String title` that retrieves the value of the greeting:

```
String title = request.getParameter("my2portlet_title");
String greeting = request.getParameter("myportlet_greeting");
```

3. Generating an Edit page from the wizard automatically includes access to the personalization framework in the page code. At the top of the Edit page, you see the `NameValuePersonalizationObject` declared. This form of personalization in OracleAS Portal allows easy storage of name/value pairs.

The Edit page handles two cases: viewing the page or applying changes to it. The changes we have made so far affect the code for viewing the page. Applying changes to the Edit page is handled in the block of code beginning with `if (action !=null)`.

In this block of code, you must store the new portlet greeting. You must also account for the case where the user decides to make no changes and you simply retrieve the existing greeting:

```
if (action !=null)
{
    data.setPortletTitle(title);
    //Put the new greeting.
    data.putString("myportlet_greeting", greeting);
    PortletRendererUtil.submitEditData(pReq, data);
    return;
}
//Otherwise just render the form.
title = data.getPortletTitle();
//Get the old greeting.
greeting = data.getString("myportlet_greeting");
```

You are now done updating the Edit page.

You can simply duplicate these changes for the Edit Defaults page. The Edit Defaults page is called when a page designer or portal administrator clicks **Edit** on the page and then clicks the Edit Defaults icon for the portlet. This page sets the default personalization for this instance of the portlet. Even though the code in the JSP is identical, the PDK Framework and OracleAS Portal automatically handle the personalization differently depending on the Show mode (Edit or Edit Defaults).

7.2.2.3 Implementing Personalization for Show Pages

To have access to the personalization data in the portlet's Shared Screen mode, you need to add a few lines of code to the Show page. These lines include:

- Adding import statements.
 - Declaring the `NameValuePersonalizationObject`.
 - Retrieving the personalization data.
1. Edit your Show page and import `NameValuePersonalizationObject` and `PortletRendererUtil`. You can copy these from the Edit page if necessary.

```
<%@page contentType="text/html; charset=windows-1252"
    import="oracle.portal.provider.v2.render.PortletRenderRequest"
    import="oracle.portal.provider.v2.http.HttpCommonConstants"
    import="oracle.portal.provider.v2.personalize.
        NameValuePersonalizationObject"
    import="oracle.portal.provider.v2.render.PortletRendererUtil"
%>
```

2. Declare the `NameValuePersonalizationObject` and retrieve the edit data from the portlet render request. You can copy this from the portlet's Edit page.

```
<%
    PortletRenderRequest pReq = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    NameValuePersonalizationObject data = (NameValuePersonalizationObject)
        PortletRendererUtil.getEditData(pReq);
%>
```

3. Get the string information from the personalization framework:

```
String greeting = data.getString("myportlet_greeting");
```

4. Add some text to the Show page that displays the greeting in the Shared Screen mode of the portlet.

```
<P>Hello <%= pReq.getUser().getName() %>.</P>
<P>This is the <b><i>show</i></b> render mode!</P>
<P>Greeting: <%= greeting %></P>
```

You have now completed updating the Show page of the portlet.

7.2.2.4 Preference Information Within the XML Provider Definition

The Portlet Wizard generates all of the necessary tags for accessing the `PreferenceStore` in the XML provider definition file (`provider.xml`). By default, at the provider level, the wizard uses the `FilePreferenceStore` class to store preferences:

```
<provider class="oracle.portal.provider.v2.DefaultProviderDefinition">
<session>>false</session>
<passAllUrlParams>>false</passAllUrlParams>
<preferenceStore class="oracle.portal.provider.v2.preference.FilePreferenceStore">
    <name>prefStore1</name>
    <useHashing>>true</useHashing>
</preferenceStore>
```

At the portlet level, tags are added to use `PrefStorePersonalizationManager` as the `personalizationManager` class and `NameValuePersonalizationObject` as the data class:

```
<personalizationManager class="oracle.portal.provider.v2.personalize.
```

```

    PrefStorePersonalizationManager">
    <dataClass>oracle.portal.provider.v2.NewValuePersonalizationObject</dataClass>
</personalizationManager>

```

You need not make any changes or updates to the XML Provider Definition if you choose to continue to use the `FilePreferenceStore` class. However, if you have a global environment for OracleAS Portal (for example, you are running in a load balanced, multi-node cluster of Oracle Application Server Containers for J2EE instances) or would prefer to store preferences in the database, you can change the class from `FilePreferenceStore` to `DBPreferenceStore`.

For more information on using `DBPreferenceStore`, refer to the *Oracle Application Server Portal Configuration Guide*.

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html



7.2.2.5 Viewing the Portlet

To view the personalization changes you made in the preceding sections, you need to deploy the portlet to your application server or Oracle Application Server Containers for J2EE and refresh the page containing your portlet. For more information on deploying your portlet, refer to [Section 6.6.2.4, "Deploying to an Application Server"](#).

You should now see that the portlet contains a null greeting. Click **Personalize** in the portlet title bar and update the greeting. When you return to the page, you should see your changes.

You can also test Edit Defaults by clicking **Edit** on the page and then clicking the Edit Defaults icon. Since you have already modified the portlet, the changes will not appear to you in Shared Screen mode unless you view the page as a public user or a different user.

7.2.3 Passing Parameters and Submitting Events

OracleAS Portal and the PDK provide page parameters, public and private portlet parameters, and events to enable portlet developers to easily write reusable, complex portlets. The Portlet Wizard in Oracle JDeveloper creates portlets that are already set up to use parameters and events. This feature enables you to focus solely on adding business logic to your portlets and does not require any changes to `provider.xml`.

For an overview of parameters and events, refer to the following:

- [Section 2.12, "Public Portlet Parameters Support"](#)
- [Section 2.13, "Private Portlet Parameter Support"](#)
- [Section 2.14, "Event Support"](#)

7.2.3.1 Assumptions

1. You have followed through and understood [Section 6.6.2, "Building PDK-Java Portlets"](#).
2. You built a portlet using the wizard and successfully added it to a page.

Note: Each portlet is limited to 4K of data. The lengths of parameter and event names, display names, and descriptions all contribute towards this 4K limit. Hence, you should not use an excessive number of parameters and events per portlet, or give them lengthy names and descriptions.

7.2.3.2 Adding Parameters to Your Portlets

Using the wizard in [Section 6.6.2, "Building PDK-Java Portlets"](#), you built a basic portlet and specified a parameter called `MyParam`. If you did not create a parameter, you can create a new portlet now by right clicking on `provider.xml` in the Applications - Navigator of Oracle JDeveloper, selecting **Add Portlet**, and following the steps in [Section 6.6.2, "Building PDK-Java Portlets"](#).

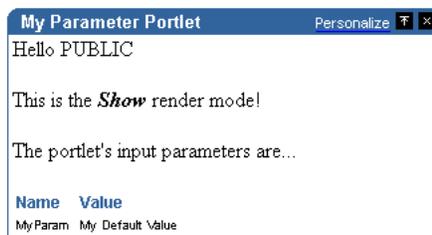
By default, the wizard creates a portlet to which you can easily map page parameters without updating any code or files. In this section, you will use the default parameter created for you by the wizard.

To use the default parameter, you need only register the provider and add the portlet to a page. After that, you perform the following tasks:

- Create a page parameter.
 - Wire the page parameter to your Java portlet.
 - Enter parameter values in the URL or another portlet that passes this page parameter.
1. Go to the **Parameter** tab of the page properties. Note that parameters should be enabled by default, but, if not, you must enable them before proceeding.
 2. Create a page parameter called `MyParameter` with a default value of `My Default Value`.
 3. Expand your Java portlet and map the page parameter you just created to the portlet parameter. The portlet's parameter should map to the page parameter called `MyParameter`.
 4. Go back to the page. Notice that, in the portlet, a value of `My Default Value` appears.
 5. View the page and enter the parameter and a value at the end of the URL:

```
&MyParameter=This%20portlet%20works
```

Figure 7–4 Parameter Portlet



If you have a portlet, such as the Simple Parameter Form included with OmniPortlet, that can pass parameters, you can map parameters from that portlet to your Java portlet using the Events tab.

If you now take a look at the code and tags generated by the wizard, you see that very little code was needed to enable parameters in the Java portlet.

Review `provider.xml`. Note that the wizard added one tag group called `inputParameter`, which includes the name of the parameter for which the portlet listens.

```
<inputParameter class="oracle.portal.provider.v2.DefaultParameterDefinition">
  <name>MyParam</name>
  <displayName>My Portlet Parameter</displayName>
</inputParameter>
```



For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

The wizard also generated code in the JSP for your Show page that receives this parameter, and displays the parameter name and its value.

```
<%
ParameterDefinition params[] =
    pReq.GetPortletDefinition().getInputParameters();
%>

<p>This portlets input parameters are ...</p>
<table align="left" width="50%"><tr><td><span class="PortletHeading1">Value
  </span></td></tr>
<%
    String name = null;
    String value = null;
    String[] values = null;
    for (int i = 0; i < params.length; i++)
    {
        name = params[i].getName();
        values = pReq.getParameterValues(name);
        if (values != null)
        {
            StringBuffer temp = new StringBuffer();
            for (int j = 0; j < values.length; j++)
            {
                temp.append(values[j]);
                if (j + 1 != values.length)
                {
                    temp.append(", ");
                }
            }
            value = temp.toString();
        }
        else
        {
            value = "No values submitted yet.";
        }
    }
%>
<tr>
  <td><span class="PortletText2" <%= name %></span></td>
  <td><span class="PortletText2" <%= value %></span></td>
</tr>
<%
}
}
```

```
%>  
</table>
```

7.2.3.3 Passing Portlet URL Parameters

Intraportlet links refer to the OracleAS Portal page on which the portlet resides, and that portlet is most likely running remotely from OracleAS Portal. Hence, you must consider how the portlet can render a link to the correct page without some knowledge of the OracleAS Portal page's URL. For more information about the types of links used by portlets, refer to [Section 6.1.2, "Guidelines for Navigation within a Portlet"](#).

When OracleAS Portal requests that a portlet render itself, OracleAS Portal passes it various URLs, which the portlet can then use to render links, including any intraportlet links it requires. You can fetch and manipulate these URLs to simplify the task of creating links among portlets and pages in OracleAS Portal.

7.2.3.3.1 Portlet URL Types OracleAS Portal provides the following URLs to its portlets:

- **PAGE_LINK** is a URL to the page upon which the portlet instance resides. You use this URL as the basis for all intraportlet links. If the portlet renders a link that navigates the user to another section of the same portlet, then this navigation must be encoded as a set of parameters using the PAGE_LINK. This URL is useful to both desktop and mobile portlets.
- **DESIGN_LINK** is a URL to an OracleAS Portal page that represents the portlet's personalization page. In OracleAS Portal, a portlet's Edit and Customize modes are not rendered on the same page as the portlet. The Edit and Customize modes take over the entire browser window. OracleAS Portal's portlet edit/customize page is not accessible to every user. It represents a minimal, static framework in which the portlet is free to render its personalization or edit options. This URL is only of use when rendering edit and customize links, which themselves are only supported in desktop clients.
- **LOGIN_LINK** is a URL to OracleAS Single Sign-On, should the portlet need to prompt the user (if PUBLIC) to login. This link is rarely used and only applicable to the desktop rendering of portlets.
- **BACK_LINK** is a URL to a page that OracleAS Portal considers a useful return point from the current page where the portlet renders itself. For example, when the portlet is rendering its Edit page, this link refers to the page on which the portlet resides and from which the user navigated to the Edit page. Consequently, it is the link you would encode in the buttons that accept or cancel the pending action. This URL is only useful for the desktop rendering of portlets (usually in Edit or Customize mode). Mobile portlets render a Back link automatically leaving the portlet to render just its own content.
- **EVENT_LINK** is a URL that raises an event rather than explicitly navigate to some page. This link points to the OracleAS Portal entry point to the event manager. This URL is useful to both desktop and mobile portlets.

7.2.3.3.2 URL Parameters URL parameters are used in classic Web applications to pass information from links or forms in the browser back to the server. The server in turn takes actions and returns the appropriate content. For example, if the user of a dictionary Web site asks for information about hedgehogs, the URL submitted to the server might look something like the following:

```
http://dictionary.reference.com/search?q=Hedgehog
```

If the server is responsible for rendering the whole page and the client communicates directly with the server, this form of URL works well. In the OracleAS Portal case, the client does not communicate directly with portlets. Instead, OracleAS Portal mediates between the client and the portlet. Moreover, because most pages have multiple portlets, OracleAS Portal communicates with multiple portlets.

For example, suppose a page contains two portlets, a thesaurus portlet and a dictionary portlet. Both portlets use `q` as a parameter to record the search queries made by the user. If the user queries the thesaurus portlet, the URL used to re-request the page with the updated thesaurus portlet must contain the thesaurus portlet's parameter, `q`. The thesaurus parameter must also be distinguished from dictionary portlet parameter `1`, which performs the same function for that portlet. An example URL with the properly qualified thesaurus parameter might look something like the following:

```
http://host/portal/page?_pageid=33,1&_dad=portal&_schema=PORTAL
    &_piref33_38279_33_1_1.q=Hedgehog
```

Notice the fully qualified parameter name, `_piref33_38279_33_1_1.q`. It identifies the parameter and distinguishes it from other parameters on the page. Further, notice that the URL contains some parameters unrelated to any portlet. These parameters are untouched by the portlet because it does not own them.

The portlet developer must ensure that the portlet:

- properly qualifies its own parameters when they are built into links and forms.
- leaves unchanged any parameters that do not belong to it.

The following API call transforms an unqualified parameter name into a qualified parameter name:

```
HttpPortletRendererUtil.portletParameter(HttpServletRequest request,
    String param);
```

`HttpPortletRendererUtil` is in the package `oracle.portal.provider.v2.render.http`.

For example:

```
qualParamQ = HttpPortletRendererUtil.portletParameter(r, "q");
```

To fetch the value of a portlet parameter from the incoming request, you can use the following API:

Note: The API converts the parameter name into the qualified parameter name before fetching the value from the incoming request. Hence, you need not perform this step.

```
PortletRenderRequest.getQualifiedParameter(String name)
```

`PortletRenderRequest` is in the package `oracle.portal.provider.v2.render`.

For example:

```
valueQ = r.getQualifiedParameter("q");
```

The other aspect of a portlet's responsibilities with respect to URL parameters is to not disturb the parameters on the URL that it does not own. The utilities you may use to

ensure adherence to this rule are discussed in [Section 7.2.3.3.3, "Building Links with the Portlet URL Types"](#) and [Section 7.2.3.3.4, "Building Forms with the Portlet URL Types"](#).

7.2.3.3.3 Building Links with the Portlet URL Types To build links with the URL parameters, you need to access them and use them when writing portlet rendering code. To fetch the URL for a link, you call the following APIs in the PDK:

```
portletRenderRequest.getRenderContext().getPageURL()
portletRenderRequest.getRenderContext().getEventURL()
portletRenderRequest.getRenderContext().getDesignURL()
portletRenderRequest.getRenderContext().getLoginServerURL()
portletRenderRequest.getRenderContext().getBackURL()
```

In the case of portlet navigation, you need to add (or update) your portlet's parameters in the page URL. To perform this task, you can use the following API to build a suitable URL:

```
UrlUtils.constructLink(
    PortletRenderRequest pr,
    int linkType, -- UrlUtils.PAGE_LINK in this case
    NameValue[] params,
    boolean encodeParams,
    boolean replaceParams)
```

`UrlUtils` resides in the package called `oracle.portal.provider.v2.url`. Notice that you do not actually fetch the page URL yourself. Rather you use one of the supplied portlet URL types, `UrlUtils.PAGE_LINK`.

The parameter names in the `params` argument should be fully qualified. Moreover, assuming that you properly qualify the parameters, `UrlUtils.constructLink` with the appropriate `linkType` does not disturb other URL parameters that are not owned by the portlet.

An alternative version of `UrlUtils.constructLink` accepts a URL as the basis for the returned URL. If you require an HTML link, you can use `UrlUtils.constructHTMLLink` to produce a complete anchor element.

The following example portlet, `ThesaurusLink.jsp`, uses the parameter `q` to identify the word for which to search the thesaurus. It then creates links on the found, related words that the user may follow in order to get the thesaurus to operate on that new word. Refer to the example in [Section 7.2.3.3.4, "Building Forms with the Portlet URL Types"](#) to see the initial submission form that sets the value of `q`.

Note: When rendering attributes in `SimpleResult` (for a mobile portlet), you must escape the attribute value if it is likely to contain invalid XML characters. Most URLs contain `&` to separate the URL's parameters. Hence, you usually need to escape attributes that contain URLs with:

```
oracle.portal.utils.xml.v2.XMLUtil.escapeXMLAttribute
```

```
<%
String paramNameQ = "q";
String qualParamNameQ =
HttpPortletRendererUtil.portletParameter(paramNameQ);
PortletRenderRequest pRequest = (PortletRenderRequest)
    request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
String paramValueQ = pRequest.getQualifiedParameter(paramNameQ);
```

```

%>
<!-- Output the HTML content -->
<center>
  Words similar to <%= paramValueQ %>
  <br>
  Click on the link to search for words related to that word.
  <br>
  <ul>
%>
    String[] relatedWords = Thesaurus.getRelatedWords(paramValueQ);
    NameValue[] linkParams = new NameValue[1];
    for (int i=0; i<=relatedWords.length; i++)
    {
      linkParams[0] = new NameValue(
        qualParamNameQ, relatedWords[i]);
%>
      <li>
      <b> <%= relatedWords[i] %> </b>
      <%= UrlUtils.constructHTMLink(
        pRequest,
        UrlUtils.PAGE_LINK,
        "(words related to " + relatedWords[i] + ")",
        "",
        linkParams,
        true,
        true)%>
      </li>
%>
    }
%>
  </ul>
</center>

```

7.2.3.3.4 Building Forms with the Portlet URL Types Use of portlet parameters in forms is little different from links. The two fundamental rules continue to apply:

- Qualify the portlet's parameter names.
- Do not manipulate or remove the other parameters on the incoming URL.

In terms of markup and behavior, forms and links differ quite considerably. However, just as with links, PDK-Java contains utilities for complying with these two basic rules.

The code for properly qualifying the portlet's parameter name is the same as described in [Section 7.2.3.3.3, "Building Links with the Portlet URL Types"](#). After all, a parameter name is just a string, whether it be a link on a page or the name of a form element.

Forms differ from links in the way you ensure that the other parameters in the URL remain untouched. Once you open the form in the markup, you can make use of one of the following APIs:

```

UrlUtils.htmlFormHiddenFields(pRequest,UrlUtils.PAGE_LINK, formName);
UrlUtils.htmlFormHiddenFields(someURL);

```

where `formName = UrlUtils.htmlFormName(pRequest, null)`.

Note: Just as parameters in URLs and element names in forms require qualification to avoid clashing with other portlets on the page, form names must be fully qualified because any given page might have several forms on it.

The `htmlFormHiddenFields` utility writes HTML hidden form elements into the form, one form element for each parameter on the specified URL that is not owned by the portlet.

```
<INPUT TYPE="hidden" name="paramName" value="paramValue">
```

Thus, the developer needs only to add their portlet's parameters to the form.

The other item of which you need to be aware is how to derive the submission target of your form. In most cases, the submission target is the current page:

```
formTarget = UrlUtils.htmlFormActionLink(pRequest,UrlUtils.PAGE_LINK)
```

The value of `formTarget` can be the action attribute in an HTML form or the target attribute in a `SimpleForm`. Even though the method name includes HTML, it actually just returns a URL and thus you can use it in mobile portlets, too.

The following example form renders the thesaurus portlet's submission form. Refer to the example in [Section 7.2.3.3.3, "Building Links with the Portlet URL Types"](#) for the portlet that results from the submission of this form.

```
<%
    String paramNameSubmit = "submit";
    String paramNameQ = "q";
    String qualParamNameQ =
        HttpPortletRendererUtil.portletParameter(paramNameQ);
    String qualParamNameSubmit =
        HttpPortletRendererUtil.portletParameter(paramNameSubmit);
    PortletRenderRequest pRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    String formName = UrlUtils.htmlFormName(pRequest, "query_form");
%>
<!-- Output the HTML content -->
<center>
    <b>Thesaurus</b>
    Enter the word you wish to search for
    <form name="<%= formName %>" method="POST"
        action="<%= UrlUtils.htmlFormActionLink(pRequest,UrlUtils.PAGE_LINK) %>">
        <%= UrlUtils.htmlFormHiddenFields(pRequest,UrlUtils.PAGE_LINK, formName)%>
        <table><tr><td>
            Word of interest:
        </td><td>
            <input
                type="text"
                size="20"
                name="<%= qualParamNameQ %>"
                value="" >
            </td></tr></table>
        <input type="submit" name="<%= qualParamNameSubmit %>" Value="Search">
    </form>
</center>
```

7.2.3.3.5 Implementing Navigation within a Portlet You can implement navigation within a portlet in one of three ways:

- Pass navigation information in rendered URLs via explicit portlet parameters. Branching logic within the portlet code then determines which section of the portlet to render based on the URL. This option represents a small extension to the thesaurus example presented in [Section 7.2.3.3.3, "Building Links with the Portlet URL Types"](#) and [Section 7.2.3.3.4, "Building Forms with the Portlet URL Types"](#). Basically, instead of performing thesaurus search operations using the value of parameter `q`, the portlet branches based on the parameter value and renders different content accordingly.
- Pass navigation information as described in the previous item but use PDK-Java to interpret the parameter and thus branch on its value. This option requires some further changes to the thesaurus example and is more fully explained below.
- Use session storage to record the portlet state and URL parameters to represent actions rather than explicit navigation. This method provides the only way that you can restore the portlet to its previous state when the user navigates off the page containing the portlet. Once the user leaves the page, all portlet parameters are lost and you can only restore the state from session storage, assuming you previously stored it there. This option requires that you understand and implement session storage. Refer to [Section 7.2.5.2, "Implementing Session Storage"](#) for more information about implementing session storage.

The following portlet code comes from the multi-page example in the sample provider of PDK-Java:

```
<portlet>
  <id>11</id>
  <name>Multipage</name>
  <title>MultiPage Sample</title>
  <shortTitle>MultiPage</shortTitle>
  <description>
    This portlet depicts switching between two screens all
    in the context of a Portal page.
  </description>
  <timeout>40</timeout>
  <timeoutMessage>MultiPage Sample timed out</timeoutMessage>
  <renderer class="oracle.portal.provider.v2.render.RenderManager">
    <contentType>text/html</contentType>
    <showPage>/htdocs/multipage/first.jsp</showPage>
    <pageParameterName>next_page</pageParameterName>
  </renderer>
</portlet>
```

Notice that the value of `pageParameterName` is the name of a portlet parameter, `next_page`, that the PDK framework intercepts and interprets as an override to the value of the `showPage` parameter. If the PDK framework encounters the qualified version of the parameter when the multi-page portlet is requested, it will render the resource identified by `next_page` rather than `first.jsp`. Note that the PDK does not render the parameter within the portlet, that responsibility falls to the portlet.

You can modify the thesaurus example to operate with the use of this parameter. Specifically, you can use the form submission portlet to be the input for the thesaurus (the first page of the portlet), then navigate the user to the results page, which contains links to drill further into the thesaurus. The following examples illustrate these changes.

Note: The example that follows is most useful for relatively simple cases, such as this thesaurus example. If your requirements are more complex (for example, you want to build a wizard experience), then you should consider using an MVC framework such as Struts. For information on how to build portlets from struts applications, refer to [Section 7.3, "Building Struts Portlets with Oracle JDeveloper"](#).

ThesaurusForm.jsp:

```
<%
    PortletRenderRequest pRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    String paramNameSubmit = "submit";
    String paramNameQ = "q";
    String qualParamNameQ =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameQ);
    String qualParamNameSubmit =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameSubmit);
    String formName = UrlUtils.htmlFormName(pRequest, "query_form");
%>
<!-- Output the HTML content -->
<center>
    <b>Thesaurus</b>
    Enter the word you wish to search for
    <form name="<%= formName %>" method="POST"
        action="<%= UrlUtils.htmlFormActionLink(pRequest,UrlUtils.PAGE_LINK) %>"
        <%= UrlUtils.htmlFormHiddenFields(pRequest,UrlUtils.PAGE_LINK, formName)
    %>
    %>
        <%= UrlUtils.emitHiddenField(
            HttpPortletRendererUtil.portletParameter(request, "next_page"),
            "htdocs/path/ThesaurusLink.jsp" ) %>
    <table><tr><td>
        Word of interest:
    </td><td>
        <input
            type="text"
            size="20"
            name="<%= qualParamNameQ %>"
            value="" >
        </td></tr></table>
        <input type=submit name="<%= qualParamNameSubmit %>" Value="Search">
    </form>
</center>
```

Notice how `next_page` must be explicitly set to point to `ThesaurusLink.jsp`. If you do not explicitly set `next_page` in this way, it defaults to the resource registered in `provider.xml`, which is `ThesaurusForm.jsp`.

ThesaurusLink.jsp:

```
<%
    PortletRenderRequest pRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    String paramNameQ = "q";
    String paramNameNextPage = "next_page";
    String qualParamNameQ =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameQ);
    String qualParamNameNextPage =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameNextPage);
```

```

        String paramValueQ = pRequest.getQualifiedParameter(paramNameQ);
    %>
    <!-- Output the HTML content -->
    <center>
        Words similar to <%= paramValueQ %>
        <br>
        Click on the link to search for words related to that word.
        <br>
        <ul>
    <%
        Thesaurus t = new Thesaurus();
        String[] relatedWords = t.getRelatedWords(paramValueQ);
        NameValue[] linkParams = new NameValue[2];
        linkParams[0] = new NameValue(
            qualParamNameNextPage, "htdocs/path/ThesaurusLink.jsp");
        for (int i=0; i<relatedWords.length; i++)
        {
            linkParams[1] = new NameValue(
                qualParamNameQ, relatedWords[i]);
    %>
            <li>
                <b> <%= relatedWords[i] %> </b>
                <%= UrlUtils.constructHTMLLink(
                    pRequest,
                    UrlUtils.PAGE_LINK,
                    "(words related to " + relatedWords[i] + ")",
                    "",
                    linkParams,
                    true,
                    true)%>
            </li>
    <%
        }
    %>
    </ul>
    <a href="<%=XMLUtil.escapeXMLAttribute
        (pRequest.getRenderContext().getPageURL())%>">
        Reset Portlet
    </a>
</center>

```

You should also note that portlets can refresh themselves without refreshing the entire page. For example, in the multi-page portlet sample, `firstpage.jsp` uses the API to specifically enable the portlet to link to and display the second page without refreshing the entire portal page.

```

<%@ page contentType="text/html;charset=UTF-8" %>
<%@ page language="java" session="false" %>
<%@ page import="oracle.portal.provider.v2.url.UrlUtils" %>
<%@ page import="oracle.portal.provider.v2.render.http.HttpPortletRenderUtil" %>
<%@ page import="oracle.portal.provider.v2.render.PortletRenderRequest" %>
<%@ page import="oracle.portal.provider.v2.http.HttpCommonConstants" %>
<%@ page import="oracle.portal.utils.NameValue" %>
<%
PortletRenderRequest prr = (PortletRenderRequest)
request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);

NameValue[] linkParams = new NameValue[1];
linkParams[0] = new NameValue(HttpPortletRenderUtil.portletParameter(request,
"next_page"), "/htdocs/multipage/second.jsp");

```

```

%>

<center>
Hello, this is the first page<p>
<%=UrlUtils.constructHTMLLink(prr, UrlUtils.REFRESH_LINK, "second page", "",
linkParams, true, true)%>
</center>

```

7.2.3.4 Submitting Events

In the previous section, you created a portlet that received parameters. Now you will create a portlet that passes parameters and events to other portlets on the same page or a different page. Some portlets, like the Simple Parameter Form in OmniPortlet, provide an easy, declarative interface to create a simple form to pass parameters to other portlets. If you want complete control over the events passed and the look of your portlet, though, you can add events to your Java portlet.

The Portlet Wizard does not create all of the code needed to pass parameters to other portlets. The wizard updates the tags in `provider.xml` and requires that you add the necessary business logic to your JSP code. To create a portlet that uses events, you perform the following tasks:

- Create a new portlet with the Portlet Wizard.
- Add code to your JSP page.
- Map this portlet's parameters to the portlet you created in [Section 7.2.3.2, "Adding Parameters to Your Portlets"](#).

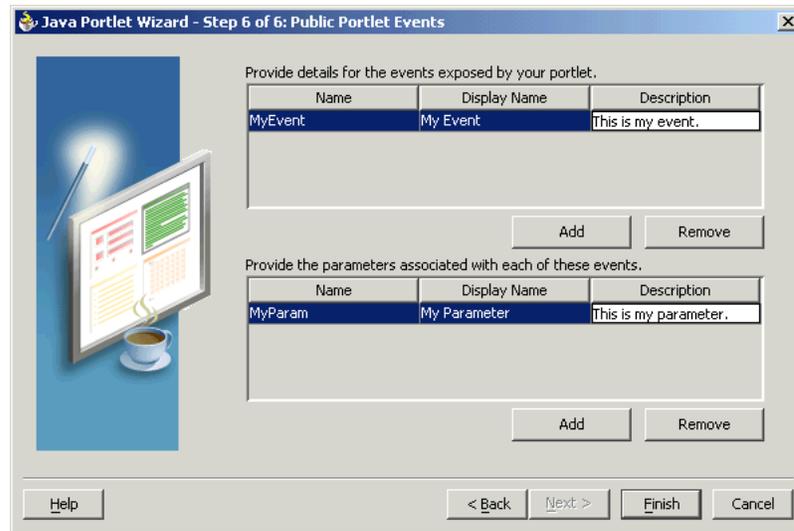
7.2.3.4.1 Creating an Events Portlet To create an events portlet, perform the following steps:

1. Create a new portlet called `MyEventsPortlet` in the same provider you used for the parameter portlet in [Section 7.2.3.2, "Adding Parameters to Your Portlets"](#) by invoking the Portlet Wizard. Go through the wizard as normal. In step 5 of the wizard, create a parameter. In step 6 of the wizard, enter the information shown in [Table 7-1](#).

Table 7-1 Events

Events Area	Name	Display Name	Description
Events Exposed	MyEvent	My Event	This is my event.
Parameters Associated	MyParam	My Parameter	This is my parameter

Figure 7-5 Public Portlet Events Page of Portlet Wizard



The wizard generates the following code in `provider.xml`:

Note: In the following example, notice that the input parameter and the event parameter have the same name, `MyParam`. They are two different parameters, even though they have the same name.

```
<showDetails>false</showDetails>
<inputParameter class="oracle.portal.provider.v2.
  DefaultParameterDefinition">
  <name>MyParam</name>
  <displayName>My Parameter</displayName>
</inputParameter>
<event class="oracle.portal.provider.v2.DefaultEventDefinition">
  <name>MyEvent</name>
  <displayName>My Event</displayName>
  <parameter class="oracle.portal.provider.v2.DefaultParameterDefinition">
    <name>MyParam</name>
    <displayName>My Parameter</displayName>
  </parameter>
</event>
<renderer class="oracle.portal.provider.v2.render.RenderManager">
```



For more information on the syntax of `provider.xml`, refer to the provider Javadoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

2. Import the necessary classes:

- `oracle.portal.provider.v2.event.EventUtils`
- `oracle.portal.utils.NameValue`
- `oracle.portal.provider.v2.url.UrlUtils`

3. Add a link that passes the parameter value to another portlet. As shown in the sample code below, you receive the same page parameter as the previous portlet, but in addition you create a link that passes an event as well:

```

<%@page contentType="text/html; charset=windows-1252"
import="oracle.portal.provider.v2.render.PortletRenderRequest"
import="oracle.portal.provider.v2.http.HttpCommonConstants"
import="oracle.portal.provider.v2.ParameterDefinition"
import="oracle.portal.provider.v2.event.EventUtils"
import="oracle.portal.utils.NameValue"
import="oracle.portal.provider.v2.url.UrlUtils"
%>
<%
PortletRenderRequest pReq = (PortletRenderRequest)
request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
%>
<%
    NameValue[] parameters = new NameValue[2];
    parameters[0] = new NameValue( EventUtils.eventName("MyEvent"), "");
    parameters[1] = new
NameValue(EventUtils.eventParameter("MyParam"), pReq.getParameter
("MyParam"));
%>
<span class="portletText1"><br>

<a href="<%= UrlUtils.constructLink
(pReq, pReq.getRenderContext().getEventURL(), parameters, true, true)%>">
The value of the stock is <%= pReq.getParameter("MyParam") %>
</a>
<br><br></span>

```

Note: This sample code does not handle NULL values. When the portlet is initially added to the page, you may receive an error, but, after wiring the portlet to the page parameter, it should work fine.

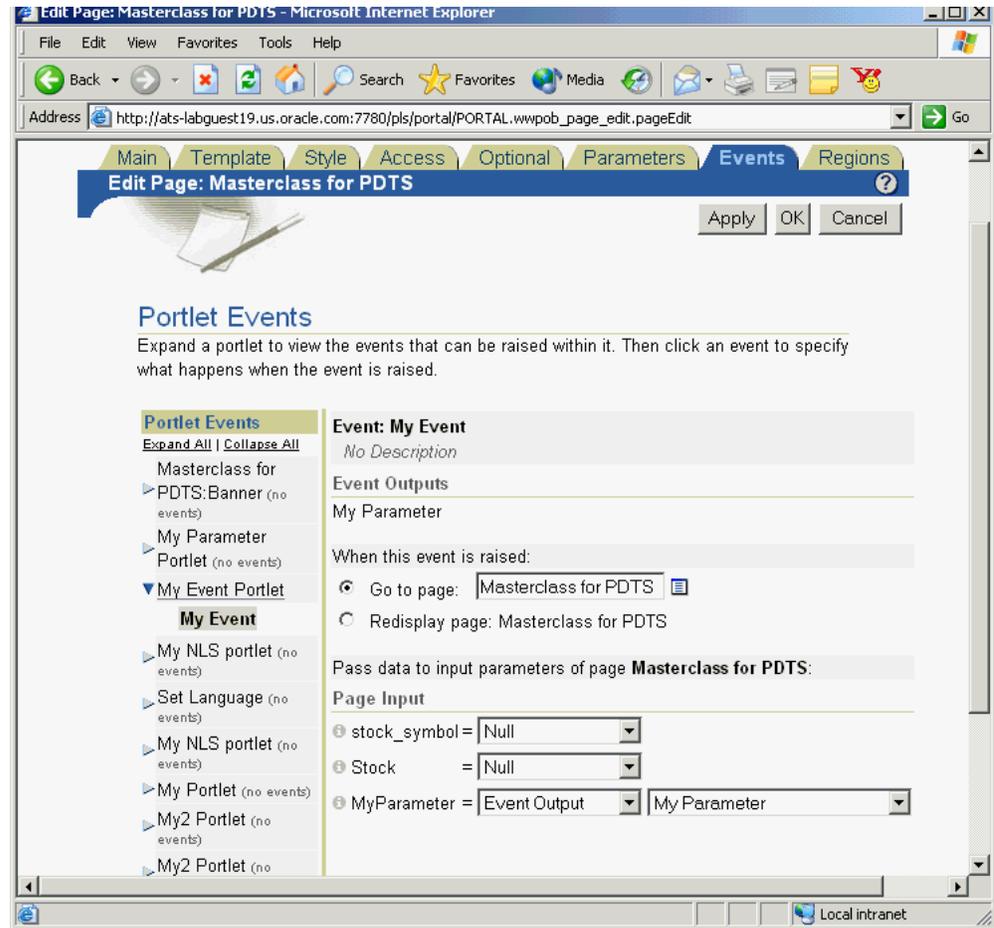
4. Add the portlet to a different page (in the same page group) than the previous portlet (the Parameter Portlet). Expand the portlet and wire it to receive the same parameter as the previous portlet.

```
My Parameter = Page Parameter MyParameter
```

5. Apply your changes on the Parameter tab and go to the Events tab. Expand the Event portlet and select the event. Select **Go to Page** and find the page to which you want to pass the event. Choose the page where the Parameter portlet is located. Configure this portlet to pass an event as the page parameter MyParameter as shown in [Figure 7-6](#).

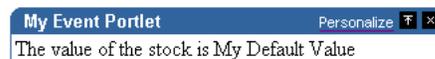
```
MyParameter = Event Output MyParameter
```

Figure 7-6 Portlet Events in the Edit Page



6. Click **OK** to view the page. Your Event portlet should have a link that displays the value received from the page.

Figure 7-7 My Event Portlet Before Parameter Change



7. You can append a parameter value to the URL and the portlet displays the value in the link.
`&MyParameter=20`
8. When you click the link, that value is passed to the Parameter portlet on its page.

Figure 7-8 My Event Portlet After Parameter Change



7.2.4 Using JNDI Variables

When writing Java portlets, you may set deployment specific properties through the JNDI service such that their values may be retrieved from your provider code. In this

way, you can specify any property in a provider deployment and then easily access it anywhere in your provider code. PDK-Java provides utilities to enable the retrieval of both provider and non-provider JNDI variables within a J2EE container. To use JNDI variables, you need to perform the following tasks:

- [Declaring JNDI Variables](#)
- [Setting JNDI Variable Values](#)
- [Retrieving JNDI Variables](#)

7.2.4.1 Declaring JNDI Variables

You declare JNDI variables in the `web.xml` file for your provider. The format for declaring a JNDI variable is as follows:

```
<env-entry>
  <env-entry-name>variableName</env-entry-name>
  <env-entry-type>variableType</env-entry-type>
  <env-entry-value>variableValue</env-entry-value>
</env-entry>
```

The `env-entry-name` element contains the name by which you want identify the variable. `env-entry-type` contains the fully qualified Java type of the variable. `env-entry-value` contains the variable's default value.

7.2.4.1.1 Variable Types In the `env-entry-type` element, you should supply the fully-qualified Java type of the variable, which will be expected by your Java code. The Java types you may use in your JNDI variables are as follows:

- `java.lang.Boolean`
- `java.lang.String`
- `java.lang.Integer`
- `java.lang.Double`
- `java.lang.Float`

The J2EE container uses these type declarations to automatically construct an object of the specified type and gives it the specified value when you retrieve that variable in your code.

7.2.4.1.2 Variable Naming Conventions The PDK-Java defines a number of environment variables that can be set at the individual provider service level or at the Web application level. To avoid naming conflicts between different provider services or different application components packaged in the same Web application, we recommend you devise some naming convention.

Note: If you use the `EnvLookup` method, you must use `oracle/portal/provider/service/property`. You cannot substitute your own company name or component in this case.

For example:

- Provider service specific names should be of the form:
`{company}/{component name}/{provider name}/{variable name}`
- Shared names should be of the form:

`{company}/{component name}/{provider name}/global`
 where:

- `{company}` is the name of the company owning the application.
- `{component name}` is the name of the application or component with which the provider is associated.
- `{provider name}` is the service name of the provider.
- `{variable name}` is the name of the variable itself.

As you can see, these naming conventions are similar to those used for Java packages. This approach minimizes the chance of name collisions between applications or application components. PDK-Java provides utilities that allow you to retrieve variables in this form without hard coding the service name of the provider into your servlets or JSPs. The service name need only be defined in the provider's WAR file. Refer to [Section 7.2.4.3, "Retrieving JNDI Variables"](#) for more information on retrieving JNDI variables.

7.2.4.1.3 Examples The following examples illustrate provider variable names:

```
oracle/portal/myProvider/myDeploymentProperty
oracle/portal/myprovider/myProperties/myProperty
```

The following example illustrates non-provider variable names:

```
oracle/portal/myOtherProperty
```

7.2.4.2 Setting JNDI Variable Values

In your provider deployment, you may want to set a new value for some or all of your JNDI variables. You can perform this task in one of two ways:

- If you are using Oracle Enterprise Manager 10g, you can set the variables from there.
- If you are using a standalone instance of Oracle Application Server Containers for J2EE, then you need to manually change the variable values in the PDK-Java's `orion-web.xml` file.

7.2.4.2.1 Setting Values in Oracle Enterprise Manager 10g To set variable values in Oracle Enterprise Manager 10g, do the following:

1. In Oracle Enterprise Manager 10g, click the instance where you have deployed PDK-Java.
2. Click the name representing this deployment.
3. Under the Web modules heading, find and click `jpdk`.
4. In the Administration section at the bottom of the page, click **Environment**.
5. Under the Environment Entries section, all of the environment variables are listed. The default value, if it exists, is listed under the value heading. To update a value for a particular variable, enter the new value in the text box in that variable's row.
6. When you have updated all of the variable values that you want, click **Apply**.

7.2.4.2.2 Setting Values Manually To set variable values manually, do the following:

1. Open the `orion-web.xml` file in a text editor. If the file does not exist, then you must create it. For a full Oracle Application Server installation, you can locate this file in:

```
ORACLE_HOME\j2ee\OC4J_instance\application-deployments\jpdk\jpdk
```

For a standalone instance of Oracle Application Server Containers for J2EE, you can locate it in:

```
ORACLE_HOME\j2ee\home\application-deployments\jpdk\jpdk
```

2. For each deployment property you want to set, add the following entry:

```
<env-entry-mapping name="jndi_var_name">value</env-entry-mapping>
```

3. Save and close the file. When complete, your file should look something like the following:

```
<?xml version = '1.0'?>
<!DOCTYPE orion-web-app PUBLIC "-//Evermind//DTD Orion Web Application 2.3//EN"
"http://xmlns.oracle.com/ias/dtds/orion-web.dtd">
<orion-web-app deployment-version="9.0.3.0.0"
  jsp-cache-directory="./persistence"
  temporary-directory="./temp"
  servlet-webdir="/servlet/">
  <env-entry-mapping name="oracle/portal/sample/rootDirectory">
    D:\prefs</env-entry-mapping>
  <env-entry-mapping name="oracle/portal/sample/definition">
    D:\definitions\def.xml</env-entry-mapping>
</orion-web-app>
```

7.2.4.3 Retrieving JNDI Variables

JNDI is a standard J2EE technology. As such, you can access JNDI variables through J2EE APIs. For example:

```
String myVarName = "oracle/portal/myProvider/myVar"
String myVar = null;
try
{
  InitialContext ic = new InitialContext();
  myVar = (String)ic.lookup("java:env/" + myVarName);
}
catch(NamingException ne)
{
  exception handling logic
}
```

In addition to the basic J2EE APIs, PDK-Java includes a simple utility class for retrieving the values of variables defined and used by the PDK itself. These variables all conform to the naming convention described in [Section 7.2.4.1.2, "Variable Naming Conventions"](#) and are of the form:

```
oracle/portal/provider_service_name/variable_name
oracle/portal/variable_name
```

To use these APIs, you need only provide the *provider_service_name* and the *variable_name*. The utilities construct the full JNDI variable name, based on the information you provide, and look up the variable using code similar to that shown above and return the value of the variable.

The `EnvLookup` class (`oracle.portal.utils.EnvLookup`) provides two `lookup()` methods. One retrieves provider variables and the other retrieves non-provider variables. Both methods return a `java.lang.Object`, which can be cast to the Java type you are expecting.

The following code example illustrates the retrieval of a provider variable:

```
EnvLookup el = new EnvLookup();
String s = (String)el.lookup(myProviderName, myVariableName);
```

`myProviderName` represents the service name for your provider, which makes up part of the variable name. `myVariableName` represents the portion of the variable name that would come after the provider's service name. The example assumes the variable being retrieved is of type `java.lang.String`.

To retrieve a non-provider variable, you use the same code, you pass only one parameter, the variable name, to the `lookup()`, again excluding the `oracle/portal` prefix.

```
EnvLookup el = new EnvLookup();
Object o = el.lookup(myVariableName);
```

[Table 7–2](#) shows the JNDI variables provided by default with PDK-Java. If you do not declare these variables, PDK-Java looks for their values in their original locations (`web.xml` and the deployment properties file).

Table 7–2 PDK-Java JNDI Variables

Variable	Description
<code>oracle/portal/provider/provider_name/autoReload</code>	Boolean auto reload flag. Defaults to true.
<code>oracle/portal/provider/provider_name/definition</code>	Location of provider's definition file.
<code>oracle/portal/provider/global/log/logLevel</code>	Log setting (0 through 8). 0 being no logging and 8 the most possible logging.
<code>oracle/portal/provider/provider_name/maxTimeDifference</code>	Provider's HMAC time difference.
<code>oracle/portal/provider/<service_name>/resourceUrlKey</code>	Authentication key for resource proxying through the Parallel Page Engine. Refer to <i>Oracle Application Server Portal Configuration Guide</i> for more information.
<code>oracle/portal/provider/provider_name/rootDirectory</code>	Location for provider personalizations. No default value.
<code>oracle/portal/provider/provider_name/sharedKey</code>	HMAC shared key. No default value.
<code>oracle/portal/provider/provider_name/showTestPage</code>	(non-provider) A boolean flag that determines if a provider's test page is accessible. Defaults to true.
<code>oracle/portal/provider/global/transportEnabled</code>	A boolean flag that determines whether Edit Defaults personalizations may be exported and imported. Refer to Section 7.2.7.3.2, "Disabling Export/Import of Personalizations" for more information.

7.2.5 Accessing Session Information

When a user accesses any portal page, OracleAS Portal initiates a public unauthenticated session and maintains a cookie to track information about the session across requests. If the user logs in to OracleAS Portal, this session becomes an authenticated session of the logged-in user. This portal session terminates when:

- The browser session terminates (that is, the user closes all the browser windows).
- The user explicitly logs out.
- The session times out because the user's idle time exceeds the configured limit.

As part of the metadata generation, OracleAS Portal contacts all of the providers that contribute portlets to the page, if they specify during registration that they get called for some special processing. This call allows providers to do processing based on the user session, log the user in the provider's application if needed, and establish provider sessions in OracleAS Portal. For Database providers, this call is referred to as `do_login` and for Web providers it is `initSession`. Since most Web-enabled applications track sessions using cookies, this API call allows the provider of the application to return cookies.

You can utilize the session store to save and retrieve information that persists during the portal session. This information is only available, and useful, to you during the life of the session. You should store only temporary information in the session store. Application developers may use the session store to save information related to the current user session. Data in the session store can be shared across portlets.

If the information you want to store must persist across sessions, you may want to store it in the preference store instead. Some common applications of the session store are:

- to cache data that is expensive to load or calculate (for example, search results).
- to cache the current state of a portlet (for example, the current range, or page, of search results displayed in the portlet, or sequence of events performed by user).

Note: If you need to replicate session state across middle tiers, you must mark the Web application as distributable and create a cluster island for your OC4J servers. For more information, refer to *Oracle Application Server Containers for J2EE Servlet Developer's Guide*.

Before you implement session storage, you should carefully consider the performance costs. Because portlets and providers are remote, it can be a relatively expensive operation to create and maintain even a small amount of information in the session store. For this reason, you may want to avoid altogether any session storage for public pages that are accessed frequently by many users.

Furthermore, while using the session store with Web providers, you create a stateful application that needs to track state information in memory. Similarly, you create a stateful application if you use the file-system implementation of preference store.

If scalability is an important concern for you, a stateful application may cause you problems. Stateful applications can impact the load-balancing and failover mechanism for your OracleAS Portal configuration. Even though you may deploy multiple middle-tiers accessing the same OracleAS Portal instance, you must implement sticky routing (where the same node handles subsequent requests in the same session) to track state. Sticky routing may result in lopsided load-balancing or loss of session data in case a node crashes, impacting failover. This issue is one reason why many

developers prefer to build stateless applications. However, if scalability is not a concern, then a stateful application should present no problems for you.

In the example in this section, session storage is used to count the number of times your portlet has rendered in Shared Screen mode.

7.2.5.1 Assumptions

1. You have followed through and understood [Section 6.6.2, "Building PDK-Java Portlets"](#).
2. You built a portlet using the wizard and successfully added it to a page.

7.2.5.2 Implementing Session Storage

The PDK Framework represents the session with a `ProviderSession` object, which is established during the call to the Provider Instance's `initSession` method. This object is associated with the `ProviderUser`. To make data persistent between requests from OracleAS Portal, you need to write data into the session object using the `setAttribute` method on the `ProviderSession` object. This method maps a `java.lang.Object` to a `java.lang.String` and stores that mapping inside the session object. The `String` can then be used to retrieve the `Object` during a subsequent request, provided the session is still valid.

A provider session may become invalid for the following reasons:

- The session times out.
- The `invalidate` method on `ProviderSession` is called.
- The JVM process running the servlet container is terminated.

All portlets contained by the same `ProviderInstance` share the same session for a particular `ProviderUser`. Therefore, data unique to a particular portlet instance must be mapped to a unique `String` in the session. This is accomplished using the `portletParameter` method in the `PortletRendererUtil` class. This method makes a supplied `String` parameter or attribute name unique to a `PortletInstance`, by prefixing it with a generated identifier for that instance. You can use the returned instance-specific name to write portlet instance data into the session.

For more detailed information on the PDK Framework classes, refer to the JavaDoc:

<http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/jpdk/v2/apidoc/index.html>

To implement session storage, you need to perform the following tasks:

- Import `ProviderSession`, `PortletRendererUtil`, and `HttpPortletRendererUtil`.
- Retrieve the provider session.
- Read and write the session by accessing it from within your Java portlet.
- Set the session to true in `provider.xml`.
- Register the provider for session storage and set the Login Frequency.

The steps that follow describe how to add a session count to your portlet that displays how many times the portlet has been rendered for the current session.

1. After using the wizard to create a portlet, you can edit the JSP for the Show page in Oracle JDeveloper. You need to import the following classes:



```

<%@page contentType="text/html; charset=windows-1252"
import="oracle.portal.provider.v2.render.PortletRenderRequest"
import="oracle.portal.provider.v2.http.HttpCommonConstants"
import="oracle.portal.provider.v2.ProviderSession"
import="oracle.portal.provider.v2.render.PortletRenderUtil"
import="oracle.portal.provider.v2.render.http.HttpPortletRenderUtil"
%>

```

2. Insert code that checks for a valid session first and then increments the count and displays it. If the session is valid and a previously stored value exists, you display the value, increment the count, and store the new value. If the session is valid but no previously stored value exists, you initialize a new count starting with 1, and display and store the value. You also want to obtain the unique string key for this portlet and then use it in an array to count the session. If no session information was received, you want to provide information to the user indicating they may need to log back in.

```

<%
PortletRenderRequest pReq = (PortletRenderRequest)
request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
ProviderSession pSession = pReq.getSession();
    if (pSession != null)
    {
        String key = PortletRenderUtil.portletParameter(pReq, "count");
        Integer i = (Integer)pSession.getAttribute(key);
        if (i == null)
        {
            i = new Integer(0);
        }
        i = new Integer(i.intValue()+1);
        pSession.setAttribute(key, i);
    }
%>

<p>Render count in this session: <%=i%> </p>

<%
    }
    else
    {
%>

<p>The session has become invalid</p>
<br>
Please log out and log in again.
<%
    }
%>

```

3. By default, the wizard does not set session to true in `provider.xml`. You need to update this flag in order for the provider to receive session information from the portal. You should only set this tag to true if you are using session information in your provider or portlets. By setting this flag to true, extra load is added to the provider calls.

```

<provider class="oracle.portal.provider.v2.DefaultProviderDefinition">
<session>true</session>

```

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:



http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

4. Register the provider in OracleAS Portal. Ensure that you select the **User** radio button and choose a **Login Frequency** of **Once Per Session** on the Define Connections page of the wizard. For a reminder on how to register your portlet, refer to [Section 6.6.2.5, "Registering and Viewing Your Portlet"](#).

7.2.5.3 Viewing the Portlet

If you have not already added your Java portlet to a page, do so now. Ensure that you perform the following tasks:

- Set your provider to **Once per User Session** for the login frequency value.
- Refresh the provider to accept the new changes.
- Re-login in case your session is no longer valid.

7.2.6 Implementing Portlet Security

This section describes the available security services for your Java portlet.

For more detailed information about the PDK classes referred to in this section, please refer to the JavaDoc:

<http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/jpdk/v2/apidoc/index.html>



7.2.6.1 Assumptions

1. You have followed through and understood [Section 6.6.2, "Building PDK-Java Portlets"](#).
2. You built a portlet using the wizard and successfully added it to a page.

7.2.6.2 Introduction to Portlet Security Features

This section introduces the major features that are available to secure your portlet providers.

7.2.6.2.1 Authentication When a user first logs in to an OracleAS Portal instance, they must enter their password to verify their identity and obtain access. This authentication is performed by OracleAS Single Sign-On server. Refer to [Section 7.2.6.3, "Single Sign-On"](#) for more information.

Once the user is authenticated to OracleAS Portal, the provider code has access to the authenticated user's identity from the `PortletRenderRequest` that is available from the `HttpServletRequest` object as follows:

```
PortletRenderRequest pr = (PortletRenderRequest)request.getAttribute
    (HttpCommonConstants.PORTLET_RENDER_REQUEST);
String userName = pr.getUser().getName();
```

When using this user identity for sensitive operations, it is important to ensure that you have configured your OracleAS Portal and this provider to use basic message authentication to secure the integrity of the identity assertion.

You also have the option of configuring the OC4J containing the JPDK provider to use JAZN-LDAP and then use J2EE security, in which case you can obtain the user's identity with the following method, again through the `HttpServletRequest` object:

```
String userName = request.getRemoteUser();
```

And if you need the user `Principal`, you can also use:

```
Principal userPrincipal = request.getUserPrincipal();
```

When configuring the provider's OC4J container in this manner, make sure to configure your OracleAS Portal and this provider to use enhanced message authentication to secure the integrity of this form of identity assertion.

Refer to *Oracle Application Server Portal Configuration Guide* for more information.

7.2.6.2.2 Authorization Authorization determines if a particular user may view or interact with a portlet. OracleAS Portal provides two types of authorization checking:

- **Portal Access Control Lists (ACLs):** After a user is authenticated by OracleAS Single Sign-On, OracleAS Portal uses ACLs to determine what privileges that user has to perform actions on portal objects, such as folders and portlets. The actions available to a user can range from simply viewing an object to performing administrative functions on it. If a user does not belong to a group that has been granted a specific privilege, OracleAS Portal prevents that user from performing the actions associated with that privilege. Refer to [Section 7.2.6.4, "OracleAS Portal Access Control Lists \(ACLs\)"](#) for more information.
- **Programmatic Portlet Security:** You can also implement your own security manager programmatically. Refer to [Section 7.2.6.5, "Portlet Security Managers"](#) for more information.
- **J2EE Security Roles:** You can use J2EE programmatic security in your provider code. To leverage this capability, you must configure your provider for enhanced authentication to protect the integrity of the asserted identity. From within your portlet code, you can use `request.isUserInRole("securityrole")`, where `request` is the `HttpServletRequest` `request` and `securityrole` is a declared J2EE security role. Refer to the *Oracle Application Server Portal Configuration Guide* for more information.

7.2.6.2.3 Communication Security To this point, we have covered user authentication and authorization, which do not check the authenticity of messages received by a provider. To completely secure your providers, secure the communication between OracleAS Portal and a Web provider. (These methods do not apply to database providers, which execute within the OracleAS Portal database.) If the communication is not secured, it is possible for someone to imitate an OracleAS Portal instance and fool the Web provider into returning sensitive information. There are three types of communication security:

- **OracleAS Portal Server Authentication** restricts access to a provider to a small number of recognized machines. This method compares the IP address or the host name of an incoming HTTP message with a list of trusted hosts. If the IP address or host name is in the list, the message is passed to the provider. If not, it is rejected before reaching the provider. Refer to [Section 7.2.6.6, "OracleAS Portal Server Security"](#) for more information.
- **Message Authentication** appends a checksum based on a shared key to provider messages. When a message is received by the provider, the authenticity of the message is confirmed by calculating the expected value of the checksum and comparing it with the actual value received. If the values are the same, the message is accepted. If they are different, the message is rejected without further processing. The checksum includes a time stamp to reduce the chance of a message being illegally recorded in transit and resent later. Refer to [Section 7.2.6.7, "Message Authentication"](#) for more information.

- **Message Encryption** relies on the use of the HTTPS protocol for communication between OracleAS Portal and providers. Messages are strongly encrypted to protect the data therein. Encryption provides a high level of security, but it incurs a performance penalty due to the additional processing required for each message. Refer to [Section 7.2.6.8, "HTTPS Communication"](#) for more information.

For more information about communication security, refer to the *Oracle Application Server Portal Configuration Guide*.

7.2.6.3 Single Sign-On

Portlets act as windows into an application. They display summary information and provide a way to access the full functionality of the application. Portlets expose application functionality directly in the portal or provide deep links that take you to the application itself to perform a task.

An application may need to authenticate the user accessing the application through the portlet. These are the possible application authentication methods:

- **Partner Application.** In this case, the application user is the same authenticated user used by OracleAS Portal.
- **External Application.** In this case, the OracleAS Portal user is different from the application user, but the application user name and password are managed by the OracleAS Portal user.
- **No Application Authentication.** In this case, the communication between provider and OracleAS Portal is not protected at all.

For more information about Single Sign-On, refer to the *Oracle Application Server Portal Configuration Guide*.

7.2.6.3.1 Partner Application A partner application is an application that shares the same OracleAS Single Sign-On as OracleAS Portal for its authentication. Thus, when a user is already logged in to OracleAS Portal, their identity can be asserted to the partner application without them having to log in again.

Partner applications are tightly integrated with OracleAS Single Sign-On. When a user attempts to access a partner application, the partner application delegates the authentication of the user to OracleAS Single Sign-On. Once a user is authenticated (that is, has provided a valid user name and password) for one partner application, the user does not need to provide a username or password when accessing other partner applications that share the same OracleAS Single Sign-On instance. OracleAS Single Sign-On determines that the user was successfully authenticated and indicates successful authentication to the new partner application.

The advantages of a partner application implementation are as follows:

- Provides the tightest integration with OracleAS Portal and OracleAS Single Sign-On Server.
- Provides the best single sign-on experience to users.
- Provides the most secure form of integration because user names and passwords are not transmitted between OracleAS Portal and the provider.

The disadvantages of a partner application implementation are as follows:

- The application must share the same user repository as OracleAS Portal even though the application's user community may be a subset of the OracleAS Portal user community. While worth some consideration, this issue is a minor one

because the portal pages that expose the application can be easily restricted to the application's user community.

- The application can only be tightly integrated to one or more OracleAS Single Sign-On instances if they share the same user repository.
- The application must be written such that it delegates authentication to OracleAS Single Sign-On.
- You must have access to the application source code.

7.2.6.3.2 External Application An external application uses a different authentication server than OracleAS Portal. The application may use a different instance of OracleAS Single Sign-On than that used by OracleAS Portal or some other authentication method. However OracleAS Single Sign-On does store the user name and password of the external application for that user. This means that when a user is already logged into OracleAS Portal, they will be logged into the external application without having to type in their user name or password.

Applications that manage the authentication of users can be loosely integrated with OracleAS Single Sign-On if the administrator registers them as external applications. When a user who was previously authenticated by OracleAS Single Sign-On accesses an external application for the first time, OracleAS Single Sign-On attempts to authenticate the user with the external application. The authentication process submits an HTTP request that combines the registration information and the user's user name and password for the application. If the user has not yet registered their user name and password for the external application, OracleAS Single Sign-On prompts the user for the required information before making the authentication request. When a user supplies a user name and password for an external application, OracleAS Single Sign-On maps the new user name and password to the user's OracleAS Portal user name and stores them. They will be used the next time the user needs authentication with the external application.

The advantages of an external application implementation are as follows:

- Allows integration with many portals. If, however, one of the portals is preferred over the others, the application could be integrated as a partner application of that preferred portal and an external application of the others.
- Provides a single sign-on experience for users. However, users still must maintain different user names and passwords. In addition, the external application user name mapping must be maintained.
- Allows integration with multiple portals independent of their user repositories and OracleAS Single Sign-On.
- Avoids the requirement of having access to the application source code.

The disadvantages of an external application implementation are as follows:

- Does not share the same user repository as the portal, which requires additional maintenance of user information by the end user.
- Transmits the user name and password to the provider in plain text, unless you implement SSL.

7.2.6.3.3 No Application Authentication The provider trusts the OracleAS Portal instance sending the request completely. The provider can determine if the user is logged in and the portal user name, but the application has not authenticated the user.

The advantages of no application authentication are as follows:

- Provides the easiest form of integration and the fastest to implement.

The disadvantages of no application authentication are as follows:

- Provides the least security.
- Provides the weakest integration with OracleAS Portal.

7.2.6.4 OracleAS Portal Access Control Lists (ACLs)

When users log into an OracleAS Portal instance, they are authenticated by an OracleAS Single Sign-On instance. Having verified their identity, OracleAS Portal uses ACLs to determine whether they are authorized to access particular portlets and add them to pages from the Portlet Repository.

OracleAS Portal ACLs operate according to the following security characteristics:

- **Privileges** define the actions that can be performed on the object to which they are granted. Privileges include actions such as Manage and Execute.
- **OracleAS Portal users and their privileges** are granted from the Administer tab of the Builder.
- **OracleAS Portal user groups** are administered from the Administer tab of OracleAS Portal Builder. Membership in the groups and privileges granted to the groups are all defined and maintained here. A privilege granted to a user group is inherited by all the users of that group.
- **Provider privileges** apply to the provider and all of its portlets. Provider ACLs are administered on the Provider tab of the OracleAS Portal Navigator.
- **Portlet privileges** can override the privileges set for the provider of the portlet. Portlet ACLs are administered from the Provider tab of the OracleAS Portal Navigator. Clicking **Open** for a provider takes you to a page that manages the portlets of the provider.

For more information on the available privileges for objects, users, and user groups in OracleAS Portal, refer to the *Oracle Application Server Portal Configuration Guide*.

The advantages of ACLs are as follows:

- ACLs offer a simple, yet powerful, mechanism to secure OracleAS Portal objects.
- Central management of user group membership simplifies the management of ACLs because it negates the necessity of modifying the ACLs associated with each object.

The disadvantages of ACLs are as follows:

- ACLs are applied at the provider or portlet level. You cannot vary the security rules for a portlet depending on the page where you place it.

7.2.6.5 Portlet Security Managers

Portlet security managers are implemented within a provider to verify that a given user may view an instance of the portlet. When a user views a page with a portlet instance on it, security managers determine whether the user has the appropriate privileges to see the portlet. Implementing access control methods in the provider restricts the retrieval of content from a portlet (that is, hides the portlet) from users without the appropriate privileges. Only if the specified characteristics, such as user details and preferences, pass the authorization logic will the content be retrieved for the user. If no portlet security methods are implemented in the provider, then any user name may be passed in, even fictitious, unauthenticated ones.

A provider can implement two portlet security methods:

- Get a list of portlets.
- Verify the accessibility of the portlet.

Portlets have access to the OracleAS Portal user privileges and groups of which the user is a member. The following information can be used by the security methods:

- The default group of the user
- The privileges of a user or group
- The highest available privilege of a user across all groups
- The objects the user can access (only in database providers)

`AuthLevelSecurityManager` has access to the following information about authorization level:

- Strongly authenticated.

The user has been authenticated by OracleAS Single Sign-On in the current OracleAS Portal session, that is, the user logged in with a valid user name and password, and requested the portlet in the context of that session.

- Weakly authenticated.

A user who was previously strongly authenticated returns to view a page without an active OracleAS Portal session. A persistent cookie (maintained by the user's browser) indicates that in some previous session the user logged on with a valid user name and password.

- Public or not authenticated.

The user has not logged in within the context of the current OracleAS Portal session, and does not have a persistent cookie to indicate that such a state previously existed.

To incorporate these security services into your Java portlet, you simply need to update `provider.xml` and set the security level to strong, weak, or public. Place the following XML right above the `</portlet>` tag in `provider.xml`:

```
<securityManager class="oracle.portal.provider.v2.security.AuthLevelSecurityManager">
  <securityLevel>strong</securityLevel>
</securityManager>
```

After you make this change to `provider.xml`, refresh the provider.

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

The advantages of security methods are as follows:

- You can enable a portlet to produce different output depending on the level of authorization.

The disadvantages of security methods are as follows:

- Most security manager implementations will use the authorization level or some other user specific element in an incoming message. A check of this type could be bypassed by an entity imitating an OracleAS Portal instance.



7.2.6.5.1 Viewing the Portlet After you add a security manager to a portlet, you can validate it by following these steps:

1. Ensure you are logged in to an OracleAS Portal instance with privileges to create pages and add portlets to a page.
2. Create a new portal page, ensuring it is visible to PUBLIC.
3. Add your Java portlet to the page.
4. Make a note of the direct URL to your new Portal page.
5. Now log out of the Portal instance by clicking the **Logout** link.
6. Directly access the Portal page by entering the URL noted in Step 4 into your browser's address bar.

You will see the page created in Step 2 but not the portlet added in Step 3. When you added the portlet to the page, you were logged in and hence strongly authenticated. The PDK runtime detected this and allowed you to add the portlet. When you logged out and viewed the page, you were no longer strongly authenticated and hence the PDK Framework did not allow rendering of the portlet's contents.

If you log in again and view the page, you will see that the portlet is still there.

7.2.6.5.2 Implementing Your Own Security Manager If your portlet requires special security arrangements which are not provided by the implementations shipped with the PDK, you will need to supply your own custom `PortletSecurityManager` controller class. To do this, extend the `oracle.portal.provider.v2.security.PortletSecurityManager` class and supply implementations for the two methods specified by the interface. Then replace the class attribute of the `securityManager` controller element in the XML provider definition with your new class name and configure child elements appropriately.

7.2.6.6 OracleAS Portal Server Security

One way to prevent unauthorized access to providers is to restrict access to the provider to known client machines at the server level. Because only the identified clients may access the provider, this method defends against denial of service attacks.

In Oracle Application Server, you use the `allow` and `deny` directives in the `httpd.conf` file to control access to client machines based on their host names or IP addresses. If host names are used as discriminators, the server needs to look them up on its Domain Name Server (DNS), which adds extra overhead to the processing of each request. Using the IP address circumvents this problem, but the IP address of a remote client may change without warning.

The advantages of server security are as follows:

- It limits access to the provider to trusted hosts only.
- It simplifies configuration.

The disadvantages of server security are as follows:

- OracleAS Web Cache does not have IP address checking capability. If OracleAS Web Cache sits in front of a provider, you have no protection from a client on any host sending show requests to OracleAS Web Cache.
- Restricting access to certain IP addresses and host names may be circumvented by sending messages to a provider containing fake IP addresses and host names. This

trick is difficult to perform effectively since return messages go to the machine whose IP address was copied, but it can still cause problems.

For more information on this topic, refer to the *Oracle Application Server Portal Configuration Guide*.

7.2.6.7 Message Authentication

PDK-Java supports message authentication so that access may be limited to a specified provider instance or group of provider instances. A provider is registered with a secret shared key known only to OracleAS Portal and provider administrators.

OracleAS Portal sends a digital signature, calculated using a Hashed Message Authentication Code (HMAC) algorithm, with each message to a provider. A provider may authenticate the message by checking the signature using its own copy of the shared key. This technique may be used in Secure Socket Layer (SSL) communication with a provider instead of client certificates.

OracleAS Portal calculates a signature based on user information, a shared key and a time stamp. The signature and time stamp are then sent as part of the SOAP message. The time stamp is based on UTC (coordinated universal time, the scientific name for Greenwich Mean Time) so that timestamps can be used in messages between computers in different time zones.

When the provider receives this message it generates its own copy of the signature. If the signatures agree, it will then compare the message time stamp with the current time. If the difference between the two is within an acceptable value, the message is considered authentic and is processed accordingly.

A single provider instance cannot support more than one shared key because it could cause security and administration problems. For instance, if one copy of the shared key is compromised in some way, the provider administrator has to create a new key and distribute it to all of the OracleAS Portal clients, who then must update their provider definitions. The way around this problem is to deploy different provider services, specifying a unique shared key for each service. Each provider service has its own deployment properties file so that each service is configured independently of the others. The overhead of deploying multiple provider services within the same provider adapter is relatively small.

In a provider without OracleAS Web Cache in front of it, this use of the same signature cookie over the lifetime of a provider session implies a tradeoff between performance and the security provided by authenticating the requests. The signature cookie value is only calculated once after the initial SOAP request establishes the session with the provider. The shorter the provider session timeout, the more often a signature will be calculated providing greater security against a show request being resent illegally. However, the SOAP request required to establish a session incurs a time penalty.

In a provider using OracleAS Web Cache to cache show request responses, you have a similar tradeoff. Cached content is secured in the sense that incoming requests must include the signature cookie to retrieve it, but caching content for an extended period of time leaves the provider open to illegal show requests.

While the signature element provides protection against interception and resending of messages, it does nothing to prevent interception and reading of message contents. Messages are still transmitted in plain text. If you are concerned about the content of messages being read by unauthorized people, you should use message authentication in conjunction with SSL.

The advantages of message authentication are as follows:

- Ensures that the message received by a provider comes from a legitimate OracleAS Portal instance.

The disadvantages of message authentication are as follows:

- Causes administration problems if a provider serves more than one portal.
- Entails performance implications if made very secure by having a short session timeout.

For more information on this topic, refer to the *Oracle Application Server Portal Configuration Guide*.

7.2.6.8 HTTPS Communication

Normal communication between OracleAS Portal and a provider uses HTTP, a network protocol that transmits data as plain text using TCP as the transport layer. HTTPS uses an extra secured layer (SSL) on top of TCP to secure communication between a client and a server, making it difficult to intercept and read messages.

Each entity (for example, an OracleAS Web Cache instance) receiving a communication using SSL has a freely available public key and a private key known only to the entity itself. Any messages sent to an entity are encrypted with its public key. A message encrypted by the public key may only be decrypted by the private key so that, even if a message is intercepted by a felonious third party, it cannot be decrypted.

Certificates used to sign communications ensure that the public key does in fact belong to the correct entity. These are issued by trusted third parties, known as Certification Authorities (CA). They contain an entity's name, public key, and other security credentials and are installed on the server end of an SSL communication to verify the identity of the server. Client certificates may also be installed on the client to verify the identity of a client.

Oracle Wallet Manager manages public key security credentials. It generates public and private key pairs, creates a certificate request to a CA, and installs the certificate on a server.

For more information on this topic, refer to the *Oracle Application Server Portal Configuration Guide*.

7.2.6.8.1 Configuration of SSL When a provider is registered from an OracleAS Portal instance, only one URL is entered, which means either HTTP or HTTPS may be used but not both.

Each port on each server that may be used to receive SSL messages must have a server-side certificate installed (that is, an OracleAS Web Cache instance) in front of the Web provider and the server that hosts the provider. The certificate installed on a server port ensures that communication between two points is encrypted but does not authenticate the source of a message. Message authentication should be used as well to fully secure communication between a trusted OracleAS Portal instance and a provider.

For more information about SSL configuration for OracleAS Portal, refer to the *Oracle Application Server Portal Configuration Guide*.

7.2.6.9 LDAP (Oracle Internet Directory) Security

PDK-Java uses Portlet Security Managers for LDAP (Oracle Internet Directory) security. PDK-Java uses Oracle Internet Directory as a repository of users, groups, and permissions. It retrieves information about the logged-in user and determines whether

the user has the required permissions to view the portlet and data within the portlet. By enabling Oracle Internet Directory security, your providers can:

- Secure portlets based on groups.
- Restrict access to the administrative functions of your portlets (using your own security manager).
- Retrieve all of the user property information stored in the Oracle Internet Directory including first name, last name, title, email, telephone number, groups, and photo.
- Create users and groups for OracleAS Portal.

By default, Oracle Internet Directory security is disabled. You must make a change in the deployment properties file for a specific provider to enable this feature. Enabling and using Oracle Internet Directory to secure your portlets can be done quickly and easily:

1. Enable the Oracle Internet Directory manager in the deployment properties files (*provider_name.properties*).

```
oidManager=true
oidAdminClass=class_that_extends_oracle.portal.provider.v2.oid.OidInfo
```

2. Provide the connection information for Oracle Internet Directory by extending the simple class called `OidInfo`.
3. Provide a list of groups that can view your portlet in the provider definition file.

```
<group>cn=group1,cn=groups,dc=us,dc=oracle,dc=com</group>
```

Your provider connects to Oracle Internet Directory using the information provided to the `OidInfo` class by you. The portlet accesses Oracle Internet Directory using the credentials provided (for example, user name and password) and performs the specified tasks. We recommend that you create an Oracle Internet Directory user specifically for your provider connection with the minimum set of privileges needed to complete the tasks requested by your portlets. For example, if your portlet only checks group information, do not connect to the Oracle Internet Directory as an administrator.

7.2.6.9.1 Implementing Oracle Internet Directory Security PDK-Java provides a set of default classes specifically for Oracle Internet Directory integration. These classes handle the connection from your portlets to Oracle Internet Directory, enable your portlets to be secured based on OracleAS Portal groups, and provide access to user property information from within Oracle Internet Directory. The classes used by your Web provider for Oracle Internet Directory integration are as follows:

- `oracle.portal.provider.v2.oid.OidInfo` receives the Oracle Internet Directory connection information provided by the developer and connects to Oracle Internet Directory. When building your own portlets, you should extend this class to send secure connection details from the provider to Oracle Internet Directory.
- `oracle.portal.sample.v2.devguide.oid.UnsafeOidInfo` is an extension of `OidInfo` and provides an easy way to test portlet security. This class is used by the Oracle Internet Directory samples in PDK-Java and parses the deployment properties file for the Oracle Internet Directory connection information (seen below). This class should be used only for testing and development, it is not safe to use in a production scenario.

- `oidManager` is set to `false` by default. It must be set to `true` in `provider_name.properties` to enable Oracle Internet Directory. (If you have only one provider in your Web application, ensure that `provider_name.properties` is identical to `_default.properties`.) For example:

```
serviceClass=oracle.webdb.provider.v2.adapter.soapV1.ProviderAdapter
loaderClass=oracle.portal.provider.v2.http.DefaultProviderLoader
showTestPage=true
definition=providers/lab_provider/provider.xml
autoReload=true
```

oidManager=true

```
oidAdminClass=oracle.portal.sample.v2.devguide.oid.UnsafeOidInfo
oidHost=myhost.mydomain.com
oidPort=oidPort
oidUser=oidUser
oidPasswd=oidPassword
```

- `oidAdminClass` is set to the class that extends `OidInfo`. PDK-Java provides `UnsafeOidInfo` by default, but as the name suggests, this class should not be used in production scenarios.
 - `oidHost` is the machine where Oracle Internet Directory is hosted.
 - `oidPort` is the port used by the Oracle Internet Directory.
 - `oidUser` is the Oracle Internet Directory account.
 - `oidPasswd` is the Oracle Internet Directory password.

For example:

```
serviceClass=oracle.webdb.provider.v2.adapter.soapV1.ProviderAdapter
loaderClass=oracle.portal.provider.v2.http.DefaultProviderLoader
showTestPage=true
definition=providers/lab_provider/provider.xml
autoReload=true
oidManager=true
```

```
oidAdminClass=oracle.portal.sample.v2.devguide.oid.UnsafeOidInfo
oidHost=myhost.mydomain.com
oidPort=oidPort
oidUser=oidUser
oidPasswd=oidPassword
```

- `oracle.portal.provider.v2.security.GroupSecurityManager` manages which groups have access to your provider and its portlets. It retrieves this information from the provider definition file and is portlet specific. Each portlet in a provider may have different group settings. There is no limit on the number of groups that can be set using this tag, but, since the Web provider parses and validates each group in turn, listing many groups may degrade performance.
- `<group>` is the tag in `provider.xml` that handles group management. It lists the groups allowed to access the portlet. The group information here follows the same case sensitivity as the Oracle Internet Directory.

Note: The following example refers to your `portal_instance_id`, which is specific to your installation. To find your instance identifier, refer to your *Oracle Internet Directory Administrator's Guide*.

```
<securityManager class="oracle.portal.provider.v2.security.
  GroupSecurityManager">
```

```
<group>cn=DBA,cn=portal_instance_id,cn=groups,
      dc=us,dc=oracle,dc=com</group>
</securityManager>
```



For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

The advantages of Oracle Internet Directory security are as follows:

- Offers a simple, powerful way to secure your portlets.
- Secures data within your portlets based on the user's group membership.
- Creates users and groups directly from your portlets exposed as Web providers.

The disadvantages of Oracle Internet Directory security are as follows:

- Slightly degrades performance when authorizing your portlet through Oracle Internet Directory. There is a cost associated with obtaining group information from any LDAP server, but this cost only happens the first time a user accesses a portlet in a session.
- Requires provider access to Oracle Internet Directory.
- Assumes all OracleAS Portal instances served by the provider use the same Oracle Internet Directory instance.



For more information on securing your providers using Oracle Internet Directory or to set up the sample portlets secured using Oracle Internet Directory, review the technical note, *Installing the Oracle Internet Directory Portlets* on OTN.

7.2.6.9.2 Viewing Your Portlets After you secure your provider with Oracle Internet Directory, you can validate its behavior by following these steps:

1. Ensure you are logged in to an OracleAS Portal instance as a user who is a member of the group specified in the `<group>` tag in `provider.xml`.
2. Use an existing page or create a new one, ensuring it is visible to PUBLIC.
3. Add your Java portlet to the page.
4. Make a note of the direct URL to your new page.
5. Click **Logout**.
6. Directly access the page by entering the URL noted in Step 4 in your browser's address bar or login to OracleAS Portal using a user that is not part of the group listed in `provider.xml`.

You will see the page created in Step 2 but not the portlet added in Step 3. When you added the portlet to the page, you were logged in as a user authorized to view the portlet. The PDK runtime detected this and allowed you to add the portlet. When you logged out and viewed the page, you were no longer part of the group allowed to view the portlet and hence the PDK Framework did not allow rendering of the portlet's contents.

Figure 7–9 Page and Portlets for Developer



If you log in again and view the page, you will see that the portlet is still there.

Figure 7–10 Page and Portlets for Developer/Administrator



7.2.7 Controlling the Export/Import of Portlet Personalizations

The export/import facility of OracleAS Portal is a multi-purpose tool for moving your portal objects, such as portlets, between instances of OracleAS Portal. For example, you might use export/import to move objects from a development environment to a stage environment and then, finally, to a production environment. You might also use export/import to move pages and page groups between OracleAS Portal instances, or to move Web providers from one machine to another. For more information about export/import in general, please refer to the *Oracle Application Server Portal Configuration Guide*.

Because portlet default settings can be set by the administrator and then changed by the user, they require some special consideration when you import and export them. To simplify the transport process, OracleAS Portal provides default functionality that handles administrator personalization data (that is, data created via Edit Defaults mode) for you. When a portlet is exported, the default personalization data stored using PDK-Java's `PreferenceStore` mechanism is exported with the portlet by default. Hence, when the portlet is imported into a target instance of OracleAS Portal, this data is imported along with it. As a result, the portlet instance's default settings are maintained when the portlet is moved from one portal instance to another.¹

The aforementioned behavior is provided to you as a convenience and it requires no action on your part to leverage. You might, however, want to exercise more granular control over the export of personalization data than that provided by the default functionality. To implement your own requirements for export/import, you can make use of the programming interface to augment or override the default handling of personalizations.

If you use the PDK-Java preference store mechanism, the export/import of your Edit Default personalizations is built-in and requires no additional effort on your part. This default export/import of administrator personalizations relies on the PDK-Java preference store. If you have created your own preference store mechanism (for example, a file or database preference storage system), then you also must implement your own export/import support that performs the following functions:

- Exports personalizations. This functionality must at least export administrator personalizations, but it could optionally include user personalizations, too.
- Imports personalizations. Note that this functionality must reflect whatever you implemented for export. For example, if you allow the export of both administrator and user personalizations, then the import functionality must support both as well.

The export/import functionality for personalizations requires that your OracleAS Portal instance and provider are on Release 10.1.2. Export/import of personalizations behaves the same regardless of the location of your provider:

- in the default Oracle Application Server Containers for J2EE of the Oracle Application Server, where the OracleAS Portal instance is different.
- in a separate Oracle Application Server Containers for J2EE, where the OracleAS Portal instance may be different, and the provider is the same but is not registered on the target OracleAS Portal instance.

7.2.7.1 Import/Export Programming Interface

The PDK-Java's preference store mechanism allows data to be persisted by any number of application entities. The following three entities are the ones that persist data for the purposes of export/import:

1. The *portlet instance* is the portlet on a page with the default personalizations made to it by the administrator. The API for the portlet instance is:

- `oracle.portal.provider.v2.PortletInstance`
 - `exportData`

```
public byte[] exportData
(
    boolean exportUsers,
    String[] userNames,
    TransportLogger logger
)
throws PortletException
```
 - `importData`

```
public void importData
(
    byte[] data,
    TransportLogger logger
```

¹ User personalization data for OracleAS Portal objects is never exported. This restriction applies to portlets as well as other objects, such as pages.

```
)
throws PortletException
```

2. The *portlet definition* is the base portlet without any personalizations applied to it. You might think of the portlet definition as the version of the portlet that exists in the Portlet Repository before it is placed on a particular page for use. The API for the portlet definition is:

- oracle.portal.provider.v2.PortletDefinition

- exportData

```
public byte[] exportData
(
    ProviderInstance pi,
    boolean exportUsers,
    String[] userNames,
    TransportLogger logger
)
throws PortletException
```

- importData

```
public void importData
(
    ProviderInstance pi,
    byte[] data,
    TransportLogger logger
)
throws PortletException
```

3. The *provider instance* is the entity that contains and communicates with a set of portlets. The API for the provider instance is:

- oracle.portal.provider.v2.ProviderInstance

- exportData

```
public byte[] exportData
(
    boolean exportUsers,
    String[] userNames,
    TransportLogger logger
)
throws ProviderException
```

- importData

```
public void importData
(
    byte[] data,
    TransportLogger logger
)
throws ProviderException
```

By default, each of the above entities employs an instance of `oracle.portal.provider.v2.transport.PrefStoreTransporter` to transform the data from an `oracle.portal.provider.v2.preference.PreferenceStore` to a byte array for transport. For the default export/import behavior, though, only the portlet instance entity's personalization data is exported and imported. If you have persisted data at the portlet definition or provider instance level, you may want to export that data as

well. For example, a billing handle that you persisted at the `ProviderInstance` level may need to be exported.

To change the behavior of `PrefStoreTransporter`, you can override its default implementation. The example in [Section 7.2.7.3.7, "Exporting by Reference Example"](#) illustrates how you can override `PrefStoreTransporter`.

7.2.7.1.1 Logging Interface To simplify troubleshooting of your export/import transactions, you can send messages to both the calling OracleAS Portal instance and the Web provider log. PDK-Java provides a transport logging class that enables you to add events to the log during export and import operations. In this way, you can better keep track of events that occur during the transport of portlet personalizations. The log can be a valuable troubleshooting tool if you encounter unexpected behavior in your portlets during or after transport. For example, you can log events when incompatibilities between PDK-Java versions are found.

You log events using the logger object, an instance of the `oracle.portal.provider.v2.transport.TransportLogger` class provided for each of the methods mentioned above. You log events with the calling portal through the instance provided for each method. You record events in the Web provider log with the normal logging mechanism, `oracle.portal.log.LogManager`. The log levels for export/import are as follows:

- `TransportLogger.SEVERITY_INFO`
- `TransportLogger.SEVERITY_WARNING`
- `TransportLogger.SEVERITY_ERROR`

7.2.7.2 Exporting Personalizations Example

This example illustrates the most basic case where you build a portlet and accept the default behavior for the export of personalizations. In the examples in [Section 7.2.7.3.6, "Encrypting Personalization Data Example"](#) and [Section 7.2.7.3.7, "Exporting by Reference Example"](#), you will see how to enhance the security of your personalizations during export and import. To implement the more basic form of exporting personalizations, do the following:

1. Create a stock portlet and implement the Show mode with the following `MyStockPortletShowRenderer.java` class. Note that this class does not incorporate any special code to enable export/import.

```
package oracle.portal.sample.v2.devguide.tx;
import java.util.StringTokenizer;
import oracle.portal.provider.v2.PortletException;
import oracle.portal.provider.v2.personalize.NameValuePersonalizationObject;
import oracle.portal.provider.v2.render.PortletRenderRequest;
import oracle.portal.provider.v2.render.PortletRendererUtil;
import oracle.portal.provider.v2.render.http.BaseManagedRenderer;
import java.io.PrintWriter;
import oracle.portal.sample.v2.devguide.webservices.
    NetXmethodsServicesStockquoteStockQuoteServiceStub;
public class MyStockPortletShowRenderer extends BaseManagedRenderer
{
    private String pid = null;
    private String userdata;
    private String stockList;
    private String stockCode;
    public void renderBody(PortletRenderRequest request) throws PortletException
    {
        // Use the PrintWriter from the PortletRenderRequest
```

```

PrintWriter out = null;
NetXmethodsServicesStockquoteStockQuoteServiceStub ns = new
    NetXmethodsServicesStockquoteStockQuoteServiceStub();
try
{
    out = request.getWriter();
    NameValuePersonalizationObject data = null;
    data = (NameValuePersonalizationObject)PortletRendererUtil.
        getEditDefaultData(request);
    stockList= data.getString("stock");
    if(stockList!=null) {
        StringTokenizer st = new StringTokenizer(stockList,",");
        out.println("<table border='0'>");
        out.println("<thead>");
        out.println("<tr>");
        out.println("<th width='20%'>");
        out.println("<p align='left'> Stock Code</p></th><th width='20%'>");
        out.println("<p align='left'> Quote</p>");
        out.println("</th>");
        out.println("</tr>");
        out.println("<thead>");
        while(st.hasMoreElements()) {
            stockCode= st.nextElement().toString();
            out.println("<tr>");
            out.println("<td width='20%'>");
            out.println("<p align='left'>"+ stockCode +
                "</p></td><td width='20%'>");
            out.println(ns.getQuote(stockCode));
            out.println("</td>");
            out.println("</tr>");
        }
        out.println("</table>");
    }
    else
    {
        out.println("<br> Click <b>Edit Defaults</b> to define stock codes.");
    }
}
catch(Exception ioe)
{
    throw new PortletException(ioe);
}
}
}

```

2. Implement the Edit Defaults mode for your stock portlet with the following class, `MyStockPortletEditDefaultsRenderer.java`. This class enables the administrator to make and store default personalizations, which are then exported according to the default behavior.

```

package oracle.portal.sample.v2.devguide.tx;
import oracle.portal.provider.v2.PortletException;
import oracle.portal.provider.v2.http.HttpCommonConstants;
import oracle.portal.provider.v2.render.PortletRenderRequest;
import oracle.portal.provider.v2.render.http.BaseManagedRenderer;
import oracle.portal.provider.v2.render.PortletRendererUtil;
import oracle.portal.provider.v2.personalize.NameValuePersonalizationObject;
import java.io.PrintWriter;
import java.io.IOException;
import oracle.portal.provider.v2.render.http.HttpPortletRendererUtil;

```

```

public class MyStockPortletEditDefaultsRenderer extends BaseManagedRenderer
{
    public void renderBody(PortletRenderRequest request) throws PortletException
    {
        PrintWriter out = null;
        try
        {
            out = request.getWriter();
        }
        catch(IOException ioe)
        {
            throw new PortletException(ioe);
        }

        // Personalize the portlet title and stock
        String actionParam = PortletRendererUtil.getEditFormParameter(request);
        PortletRenderRequest prr = (PortletRenderRequest)
            request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
        String action = request.getParameter(actionParam);
        String title = prr.getQualifiedParameter("myportlet_title");
        String stock = prr.getQualifiedParameter("myportlet_stock");
        NameValuePersonalizationObject data = null;
        try
        {
            data = (NameValuePersonalizationObject)
                PortletRendererUtil.getEditDefaultData(request);
        }
        catch(IOException io)
        {
            throw new PortletException(io);
        }
        // Cancel automatically redirects to the page, so
        // will only receive OK or APPLY
        if (action != null)
        {
            data.setPortletTitle(title);
            data.putString("stock", stock);
            try
            {
                PortletRendererUtil.submitEditData(request, data);
            }
            catch(IOException ioe)
            {
                throw new PortletException(ioe);
            }
            return;
        }
        // Otherwise just render the form
        title = data.getPortletTitle();
        stock = data.getString("stock");
        out.print("<table border='0'> <tr> ");
        out.println("<td width='20%'> <p align='right'>Title:</p></td>
            <td width='80%'>");
        out.print("<input type='TEXT' name='" +
            HttpPortletRendererUtil.portletParameter(prr, "myportlet_title")
            + "' value='" + title + "'>");
        out.println("</td> </tr>");
        out.print("<tr> <td width='20%'> <p align='right'>Stock Codes:</p></td>
            <td width='80%'>");
        out.print("<input type='TEXT' name='" +

```

```

        HttpPortletRendererUtil.portletParameter(prr, "myportlet_stock")
        + "' value='" + stock + "'>");
    out.println("<br> For example use US Stock Codes separated by comma:
        <i> SUNW,IBM,ORCL</i>");
    out.print("</td> </tr>");
    out.println("</table>");
}
}

```

3. Create the following class, NetXmethodsServicesStockquoteStockQuoteServiceStub.java, for your stock portlet:

```

package oracle.portal.sample.v2.devguide.webservices;
import oracle.soap.transport.http.OracleSOAPHTTPConnection;
import org.apache.soap.encoding.SOAPMappingRegistry;
import java.net.URL;
import org.apache.soap.rpc.Call;
import org.apache.soap.Constants;
import java.util.Vector;
import org.apache.soap.rpc.Parameter;
import org.apache.soap.rpc.Response;
import org.apache.soap.Fault;
import org.apache.soap.SOAPException;
import java.util.Properties;
public class NetXmethodsServicesStockquoteStockQuoteServiceStub
{
    public NetXmethodsServicesStockquoteStockQuoteServiceStub()
    {
        m_httpConnection = new OracleSOAPHTTPConnection();
        m_smr = new SOAPMappingRegistry();
    }
    private String _endpoint = "http://64.124.140.30:9090/soap";
    public String getEndpoint()
    {
        return _endpoint;
    }
    public void setEndpoint(String endpoint)
    {
        _endpoint = endpoint;
    }
    private OracleSOAPHTTPConnection m_httpConnection = null;
    private SOAPMappingRegistry m_smr = null;
    public Float getQuote(String symbol) throws Exception
    {
        Float returnVal = null;
        URL endpointURL = new URL(_endpoint);
        Call call = new Call();
        call.setSOAPTransport(m_httpConnection);
        call.setTargetObjectURI("urn:xmethods-delayed-quotes");
        call.setMethodName("getQuote");
        call.setEncodingStyleURI(Constants.NS_URI_SOAP_ENC);
        Vector params = new Vector();
        params.addElement(new Parameter("symbol", String.class, symbol, null));
        call.setParams(params);
        call.setSOAPMappingRegistry(m_smr);
        Response response = call.invoke(endpointURL,
            "urn:xmethods-delayed-quotes#getQuote");
        if (!response.generatedFault())
        {

```

```

        Parameter result = response.getReturnValue();
        returnVal = (Float)result.getValue();
    }
    else
    {
        Fault fault = response.getFault();
        throw new SOAPException(fault.getFaultCode(), fault.getFaultString());
    }
    return returnVal;
}
public void setMaintainSession(boolean maintainSession)
{
    m_httpConnection.setMaintainSession(maintainSession);
}
public boolean getMaintainSession()
{
    return m_httpConnection.getMaintainSession();
}
public void setTransportProperties(Properties props)
{
    m_httpConnection.setProperties(props);
}
public Properties getTransportProperties()
{
    return m_httpConnection.getProperties();
}
}

```

4. Create a Web provider through `provider.xml` for this portlet. Notice the use of the `<preferenceStore>` element to allow for the storing of personalizations:

```

<provider class="oracle.portal.provider.v2.DefaultProviderDefinition">
  <session>false</session>
  <passAllUrlParams>false</passAllUrlParams>
  <preferenceStore class="oracle.portal.provider.
                    v2.preference.FilePreferenceStore">
    <name>prefStore1</name>
    <useHashing>true</useHashing>
  </preferenceStore>
  <portlet class="oracle.portal.provider.v2.DefaultPortletDefinition">
    <id>1</id>
    <name>MyStockPortlet</name>
    <title>My Stock Portlet</title>
    <description>Simple Stock Portlet to show Export and Import
                feature of web providers</description>
    <timeout>80</timeout>
    <showEditToPublic>false</showEditToPublic>
    <hasAbout>false</hasAbout>
    <showEdit>false</showEdit>
    <hasHelp>false</hasHelp>
    <showEditDefault>true</showEditDefault>
    <showDetails>false</showDetails>
    <renderer class="oracle.portal.provider.v2.render.RenderManager">
      <renderContainer>true</renderContainer>
      <renderCustomize>true</renderCustomize>
      <autoRedirect>true</autoRedirect>
      <contentType>text/html</contentType>
      <showPage class="oracle.portal.sample.v2.
                    devguide.tx.MyStockPortletShowRenderer"/>
      <editDefaultsPage class="oracle.portal.sample.v2.devguide.tx.
                    MyStockPortletEditDefaultsRenderer"/>
    </renderer>
  </portlet>
</provider>

```

```

</renderer>
<personalizationManager class="oracle.portal.provider.v2.personalize.
                          PrefStorePersonalizationManager">
  <dataClass>oracle.portal.provider.v2.personalize.
              NameValuePersonalizationObject
  </dataClass>
</personalizationManager>
</portlet>
</provider>

```



For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

5. Register this export-enabled provider with the source OracleAS Portal instance. For more information about registering Web providers, refer to [Section 6.6.2.5, "Registering and Viewing Your Portlet"](#).

Note: If the Web provider is running in a secured environment, remember to provide the proxy host and port while starting up Oracle Application Server Containers for J2EE. For example:

```

java -Dhttp.proxyHost=www-proxy.us.oracle.com -Dhttp.proxyPort=80
     -jar oc4j.jar

```

6. Create two regions on a sample page and add **My Stock Portlet** to the first region. For information on creating regions and pages, refer to the *Oracle Application Server Portal User's Guide*.
7. Edit the page and click the Edit Defaults icon for My Stock Portlet. Choose the stock codes SUNW, IBM, ORCL. For more information on how to edit defaults for a portlet on a page, refer to the *Oracle Application Server Portal User's Guide*.
8. Add **My Stock Portlet** to a second region and again edit the defaults. Use a different stock code this time, MSFT.
9. Export the page group containing this page. For instructions on how to export a page group, refer to Chapter 10, "Exporting and Importing Content," in the *Oracle Application Server Portal Configuration Guide*.
10. Import the page group into a target OracleAS Portal instance. For instructions on how to import a page group, refer to Chapter 10, "Exporting and Importing Content," in the *Oracle Application Server Portal Configuration Guide*.
11. View the page with My Stock Portlet in the target OracleAS Portal instance and ensure that the personalizations were maintained.

7.2.7.3 Implementing Security for Export/Import

Transporting personalizations can present a security concern if your portlet stores sensitive data and is not operating in a secured environment. At the provider and portlet level, OracleAS Portal provides several ways for you to secure the export and subsequent import of portlet personalizations. To better secure portlets and providers for exportation and importation, you can take the following actions:

- **Securing Provider Communications.** Using OracleAS Portal configuration options, you can secure the communications between providers and OracleAS Portal. This step in turn makes the export and import of portlets more secure.

- **Disabling Export/Import of Personalizations.** You can disable the export of all portlet personalization data on a per Web application basis. This method provides the greatest security but only at a significant cost in functionality because it prevents administrators from retaining their default personalizations when the portlet is moved.
- **Obfuscating Data for Transport (Automatic).** By default, OracleAS Portal obfuscates but does not encrypt personalization data before transporting it.
- **Encrypting Personalization Data for Transport.** You may want to encrypt personalization data for transport if any of the following are true:
 - Your Web provider connection is not secured via HTTPS.
 - You want to ensure the data is secured during transit.
 - You want the data to remain secure while stored in the OracleAS Portal instance.
- **Exporting by Reference.** Instead of including portlet personalization data directly in the transport set, you can include it by reference in the transport set. Because the data itself is not present in the transport set, export by reference is the most secure way of transporting personalizations.

7.2.7.3.1 Securing Provider Communications If the security of exporting/importing portlets is of concern to you, you should configure OracleAS Portal to secure communications with your portlet providers. The chief mechanisms for securing provider communications in OracleAS Portal are:

- Message authentication through a Hashed Message Authentication Code (HMAC) algorithm. For more information on message authentication for providers, refer to Section 6.1.7.8, "Message Authentication", in the *Oracle Application Server Portal Configuration Guide*.
- HTTPS between providers and OracleAS Portal. For more information on HTTPS for provider communications, refer to Section 6.1.7.9, "HTTPS Communication", in the *Oracle Application Server Portal Configuration Guide*.

Note: You cannot use certificates for the HTTPS communication with providers.

7.2.7.3.2 Disabling Export/Import of Personalizations The JNDI variable, `oracle/portal/provider/global/transportEnabled`, controls whether to allow the exportation and importation of personalizations. If you set the variable to true, personalizations are transported as part of export and import. If you set it to false, they are not transported. You can set JNDI variables for PDK-Java through Oracle Enterprise Manager 10g. If for some reason Oracle Enterprise Manager 10g is not available for the instance, you can set the values manually in `orion-web.xml`. For a full Oracle Application Server installation, this file is located in:

```
ORACLE_HOME/j2ee/OC4J_instance/application-deployments/jpdk/jpdk
```

For a standalone OC4J installation, this file is located in:

```
ORACLE_HOME/j2ee/home/application-deployments/jpdk/jpdk
```

7.2.7.3.3 Obfuscating Data for Transport (Automatic) By default, personalization data is encoded (Base64). This encoding ensures that data is obfuscated during transport. You do not need to take any actions to leverage Base64 encoding as it is provided by

default. However, if you want greater security, you can encrypt the data. Refer to [Section 7.2.7.3.4, "Encrypting Personalization Data for Transport"](#).

7.2.7.3.4 Encrypting Personalization Data for Transport By implementing the `oracle.portal.provider.v2.security.CipherManager` class for your provider, you can encrypt the personalization data prior to exporting it. Upon import, the cipher manager is invoked again to decrypt the data. Refer to [Section 7.2.7.3.6, "Encrypting Personalization Data Example"](#).

Note: If you choose to encrypt your Web providers for export via the cipher manager, you must also devise your own key management strategy for the encryption algorithm.

7.2.7.3.5 Exporting by Reference As mentioned previously, the default behavior for exporting of portlets is to include the actual personalization data in the transport set. For a more secure transport, you can code your portlet such that the personalizations are exported via pointer rather than by including the actual preference data. When the transport set is imported, the target OracleAS Portal instance sends the pointer back to the Web provider, which then has the opportunity to reassociate the actual data with the new portlet instance. Refer to [Section 7.2.7.3.7, "Exporting by Reference Example"](#).

Note: When exporting across security zones, exporting by reference may not work effectively. In general, you should only employ export by reference when transporting within the same general security environment.

7.2.7.3.6 Encrypting Personalization Data Example To encrypt personalization data in your Web provider, you need to create your own cipher manager and associate it with your portlet provider. This example provides a simple, insecure cipher manager for illustrative purposes only. To implement a secure implementation of the cipher manager for your production system, you would need to significantly extend this sample. Some of the issues you would need to consider for a production implementation are as follows:

- Do not hold the key object in memory. Read it from a persistent store as necessary.
- Use the provider's `PreferenceStore` API supported by a `DBPreferenceStore` to work in the clustered case.
- On import, if the cipher manager instance obtained from `provider.xml` matches the class name returned in the SOAP message, that `CipherManager` instance is used to perform the decryption. Hence, the instance maintained in the portlet/provider definition may be configured using any applicable means (for example, tags in `provider.xml` or JNDI variable) and that configuration is reused on import.

To encrypt personalization data in your Web provider, do the following:

Note: The sample provided below is for illustrative purposes only. You would need to significantly enhance it for use in a production environment.

1. Create a cipher manager class, `InsecureCipherManager`. This class will be used for encryption and decryption of personalization data exported from or imported to a Web provider. A base64 encoded, hard coded secret key is used with the DES algorithm supplied by the default `javax.crypto` provider of the underlying Java Runtime Environment. As a result, this particular sample is insecure because the encoded key can be recovered by a malicious party simply by decompiling the byte code.

Note: This sample makes use of the `javax.crypto` package, which is optional in Java 1.3 and must be installed manually. In Java 1.4, though, this package is present by default.

```
package oracle.portal.sample.v2.devguide.tx;
import java.io.IOException;
import java.security.GeneralSecurityException;
import javax.crypto.Cipher;
import javax.crypto.SecretKey;
import javax.crypto.SecretKeyFactory;
import javax.crypto.spec.DESKeySpec;
import oracle.portal.provider.v2.ProviderException;
import oracle.portal.provider.v2.security.CipherManager;
import sun.misc.BASE64Decoder;
public final class InsecureCipherManager implements CipherManager
{
    /**
     * Base64 encoded external form of a javax.crypto.SecretKey which was
     * generated for the DES algorithm. This is completely insecure! Anyone
     * can decompile the bytecode and recostitue the key. A more secure
     * implementation would implement a key management policy in a
     * java.security.KeyStore.
     */
    private static final String sEncodedKey = "UTJds807Arw=";
    /**
     * Generated from the (insecure) encoded form in sEncodedKey.
     */
    private SecretKey mKey;
    /**
     * Transforms the input data to a more secure form, in a single operation,
     * using the DES cryptographic algorithm along with a statically defined
     * secret key.
     * @param toEncode the input data.
     * @return an encoded form of the input data.
     * @throws ProviderException if an error occurs during transform.
     */
    public final byte[] encode(byte[] toEncode) throws ProviderException
    {
        try
        {
            Cipher c = Cipher.getInstance("DES");
            c.init(Cipher.ENCRYPT_MODE, getSecretKey());
            return c.doFinal(toEncode);
        }
        catch (GeneralSecurityException gse)
        {
            throw new ProviderException(gse);
        }
        catch (IOException ioe)
        {

```

```

        throw new ProviderException(ioe);
    }
}
/**
 * Transforms the input data to its original form, in a single operation,
 * using the DES cryptographic algorithm along with a statically defined
 * secret key.
 * @param toDecode the input data.
 * @return a decoded form of the input data.
 * @throws ProviderException if an error occurs during transform.
 */
public final byte[] decode(byte[] toDecode) throws ProviderException
{
    try
    {
        Cipher c = Cipher.getInstance("DES");
        c.init(Cipher.DECRYPT_MODE, getSecretKey());
        return c.doFinal(toDecode);
    }
    catch (GeneralSecurityException gse)
    {
        throw new ProviderException(gse);
    }
    catch (IOException ioe)
    {
        throw new ProviderException(ioe);
    }
}
/**
 * Returns a <code>javax.crypto.SecretKey</code> deserialized from the
 * obfuscated form in sEncodedKey. Note, this is highly insecure!!
 */
private SecretKey getSecretKey()
    throws GeneralSecurityException, IOException
{
    if (mKey == null)
    {
        DESKeySpec ks = new DESKeySpec((new BASE64Decoder()).decodeBuffer(
            sEncodedKey));
        SecretKeyFactory skf = SecretKeyFactory.getInstance("DES");
        mKey = skf.generateSecret(ks);
    }
    return mKey;
}
}

```

2. Modify your provider.xml to reference the cipher manager:

```

<?xml version = '1.0' encoding = 'UTF-8'?>
<?providerDefinition version="3.1"?>
<provider class="oracle.portal.provider.v2.DefaultProviderDefinition">
<providerInstanceClass>net.mzyg.tx.TxProviderInstance</providerInstanceClass>
<session>>false</session>
<passAllUrlParams>>false</passAllUrlParams>
<preferenceStore class="oracle.portal.provider.v2.
    preference.DBPreferenceStore">
    <name>prefStore1</name>
    <connection>java:comp/env/jdbc/PortletPrefs</connection>
</preferenceStore>
<b><cipherManager class="oracle.portal.sample.v2.devguide.tx.
    InsecureCipherManager"/>

```

7.2.7.3.7 Exporting by Reference Example To export by reference rather than exporting the actual personalization, do the following:

1. Override the `DefaultPortletInstance` with the following

`ExportByRefDefaultPortletInstance`:

```
package oracle.portal.sample.v2.devguide.tx;
import oracle.portal.provider.v2.DefaultPortletInstance;
import oracle.portal.provider.v2.preference.PreferenceStore;
import oracle.portal.provider.v2.transport.PrefStoreTransporter;
public class ExportByRefDefaultPortletInstance extends DefaultPortletInstance
{
    /**
     * Returns a {@link oracle.portal.provider.v2.transport.PrefStoreTransporter}
     * capable of carrying out transport operations such as export/import on
     * data applicable to {@link oracle.portal.provider.v2.PortletInstance}
     * persisted in {@link oracle.portal.provider.v2.preference.PreferenceStore}.
     * This implementation returns an {@link ExportByRefPrefStoreTransporter}.
     * @param ps the {@link oracle.portal.provider.v2.preference.PreferenceStore}
     * containing the data to be transported.
     * @return a {@link oracle.portal.provider.v2.transport.PrefStoreTransporter}
     */
    protected PrefStoreTransporter getPrefStoreTransporter(PreferenceStore ps)
    {
        return new ExportByRefPrefStoreTransporter(ps);
    }
}
```

2. Create the `ExportByRefPrefStoreTransporter` class referenced in `ExportByRefDefaultPortletInstance`. This class implements an alternative preference store transporter that does not send preference data during the export operation. Instead, it writes the context path of the source preference to the stream. During the export, it reads the context path and uses that path to look up the preference data and copy it to the new instance. This method of exporting by reference assumes that the source and target providers have access to the same preference store. In fact, the best case for this example would be the situation where the source and target providers are the same.

```
package oracle.portal.sample.v2.devguide.tx;
import java.io.IOException;
import java.io.InputStream;
import java.io.OutputStream;
import java.io.DataInputStream;
import java.io.DataOutputStream;
import oracle.portal.provider.v2.transport.PrefStoreTransporter;
import oracle.portal.provider.v2.transport.TransportLogger;
import oracle.portal.provider.v2.preference.Preference;
import oracle.portal.provider.v2.preference.PreferenceStore;
import oracle.portal.provider.v2.preference.PreferenceStoreException;
public class ExportByRefPrefStoreTransporter extends PrefStoreTransporter
{
    public ExportByRefPrefStoreTransporter(PreferenceStore prefStore)
    {
        super(prefStore);
    }
    /**
     * Exports the context path of the supplied {@link
     * oracle.portal.provider.v2.preference.Preference} from the {@link
     * oracle.portal.provider.v2.preference.PreferenceStore}.
     * @param pref the source {@link
```

```

    * oracle.portal.provider.v2.preference.Preference}
    * @param out the <code>java.io.OutputStream</out> to which data will be
    * written.
    * @param logger
    */
protected void exportPreference(Preference pref, OutputStream out,
    TransportLogger logger) throws PreferenceStoreException, IOException
{
    // Get the context path of the preference we are exporting.
    String contextPath = pref.getContextPath();
    DataOutputStream dos = new DataOutputStream(out);
    // Write the context path in the export data. The import process
    // will use this context path to lookup this preference in the
    // preference store and copy it to the new context
    dos.writeUTF(contextPath);
}
/**
 * Reads a context path from the stream and copies preference data
 * from that location into the {@link
 * oracle.portal.provider.v2.preference.PreferenceStore}.
 * @param pref the target {@link
 * oracle.portal.provider.v2.preference.Preference}
 * @param in the <code>java.io.InputStream</code> from which to read data.
 * @param logger
 */
protected void importPreference(Preference pref, InputStream in,
    TransportLogger logger) throws PreferenceStoreException, IOException
{
    // Read the context path to copy the value for this
    // preference from.
    DataInputStream dis = new DataInputStream(in);
    String contextPath = dis.readUTF();
    // Create preference object to copy from (identical to the
    // target preference but with a different context path)
    Preference sourcePref = new Preference(contextPath,
        pref.getName(), pref.getType(), (String)null);
    // Copy across the preference
    getPrefStore().copy(sourcePref, pref, true);
}
}

```

3. Update provider.xml to include the following element for your portlet:

```

<portlet class="oracle.portal.provider.v2.DefaultPortletDefinition">
...
<portletInstanceClass>oracle.portal.sample.v2.devguide.tx.
    ExportByRefDefaultPortletInstance</portletInstanceClass>
</portlet>

```



For more information on the syntax of provider.xml, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

7.2.8 Enhancing Portlet Performance with Caching

In the previous sections of this chapter, you learned how to write fully-functional Java portlets using the PDK Framework. Once you complete the basic functionality of your portlet, you may want to turn your attention to portlet performance.

Caching is a common technique for enhancing the performance of Web sites that include a great deal of dynamic content. The overhead involved in retrieving data and generating the output for dynamic content can be significantly reduced by proxying requests through a local agent backed by a large, low-latency data store known as a cache. The cache agent responds to a request in one of two ways:

- If a valid version of the requested content exists in the cache, the agent simply returns the existing cached copy, thus skipping the costly process of content retrieval and generation. This condition is called a cache hit.
- If a valid version of the requested content does not exist in the cache, the agent forwards the request to its destination and awaits the return of the content. The agent returns the content to the requestor and stores a local copy in its cache for reuse if a subsequent request for the same content arises. This condition is called a cache miss.

Web providers generate dynamic content (that is, portlets) and they often reside remotely from the OracleAS Portal instance on which they are deployed. As such, caching might improve their performance. The architecture of OracleAS Portal lends itself well to caching, since all rendering requests originate from a single page assembling agent, known as the Parallel Page Engine (PPE), which resides on the middle tier. You can make the PPE cache the portlets rendered by your Web provider and reuse the cached copies to handle subsequent requests, minimizing the overhead your Web provider imposes on page assembly.

The Web provider can use any one of three different caching methods, depending upon which one is best suited to the application. The methods differ chiefly in how they determine whether content is still valid:

1. **Expiry-based Caching:** When a provider receives a render request, it stamps its response with an expiry time. The rendered response remains in the cache and fills all subsequent requests for the same content until its expiry time passes. This caching scheme is perhaps the simplest and most performant because the test for cache validity requires very little overhead and does not involve any network round trips. Expiry-based caching suits applications where the content has a well-defined life span. For content with a less certain life span, however, expiry-based caching is less effective. Refer to [Section 7.2.8.2, "Activating Caching"](#) and [Section 7.2.8.3, "Adding Expiry-Based Caching"](#) for more information.
2. **Invalidation-based Caching:** Invalidation-based caching works essentially the same way as expiry-based caching, except that the contents of the cache can expire or become invalid at any time. Invalidation of cache content is usually triggered by an event.

For example, if you have a calendar portlet that shows your appointments for the day, the content for the portlet could be generated once, the first time you show the calendar for that day. The content remains cached until something happens to change your schedule for that day, such as the addition of an appointment, the deletion of an existing appointment, or a change of time for an appointment. Each of these change events can trigger an action in the calendar application. When such an event takes place, your calendar application can generate an invalidation request for any cached portlet content affected by the change. The next time you view a page containing your calendar portlet, the cache will not contain an entry.

Your Web provider will be contacted to regenerate the new content with the modified schedule.

This method is a very efficient way to cache content because the originator of the content, that is, your Web provider, is contacted only when new content needs to be generated, but you are not bound to a fixed regeneration schedule. Refer to [Section 7.2.8.2, "Activating Caching"](#) and [Section 7.2.8.4, "Adding Invalidation Based Caching"](#) for more information.

- 3. Validation-based Caching:** When a provider receives a render request, it stamps its response with a version identifier (or E Tag). The response goes into the cache, but, before the PPE can reuse the cached response, it must determine whether the cached version is still valid. It sends the provider a render request that includes the version identifier of the cached content. The provider determines whether the version identifier remains valid. If the version identifier is still valid, the provider immediately sends a lightweight response to the PPE without any content, which indicates the cached version can be used. Otherwise, the provider generates new content with a new version identifier, which replaces the previously cached version. In this form of caching, the PPE must always confirm with the provider whether the content is up to date. The validity of the cached copy is determined by some logic in the provider. The advantage of this approach is that the provider controls the use of the cached content rather than relying on a fixed period of time. Refer to [Section 7.2.8.2, "Activating Caching"](#) and [Section 7.2.8.5, "Adding Validation-Based Caching"](#) for more information.

7.2.8.1 Assumptions

1. You have followed through and understood [Section 6.6.2, "Building PDK-Java Portlets"](#).
2. You built a portlet using the wizard and successfully added it to a page.

7.2.8.2 Activating Caching

To use the caching features of OracleAS Portal in your Web providers, you must first activate the middle tier cache. This cache is known as the PL/SQL Cache because it is the same cache used by `mod_plsql`, the Oracle HTTP Server plug-in that calls database procedures, and hence database providers, over HTTP.

Usually, your OracleAS Portal administrator is responsible for the configuration details of caching.

For invalidation-based caching, you need to configure OracleAS Web Cache in front of the Web provider. Bear in mind that remote Web providers often do not have OracleAS Web Cache installed. For more information about OracleAS Web Cache, refer to the *Oracle Application Server Web Cache Administrator's Guide*.

Once you have installed and configured OracleAS Web Cache, ensure the following in the OracleAS Web Cache Manager:

- It points to the host name and port of the Web provider.
- Caching rules do not cause the caching of provider content. Content should be cached according to the surrogate control headers generated by the provider in its response.

7.2.8.3 Adding Expiry-Based Caching

Expiry-based caching is one of the simplest caching schemes to implement, and can be activated declaratively in your XML provider definition. You can set an expiry time for the output of any `ManagedRenderer` you utilize by setting its `pageExpires`

property to the number of minutes you want the output to be cached for. For example, suppose you want portlet output to be cached for one minute.

1. After you have used the Portlet Wizard to build a portlet as described in [Section 6.6.2, "Building PDK-Java Portlets"](#), edit the `provider.xml` file and set the `pageExpires` property tag of `showPage` to 1. This will set an expires entry of 1 minute for the portlet.

By default the wizard generates a standard and compressed tag for `showPage`. You need to expand the tag to include a subtag of `pageExpires`:

```
<showPage class="oracle.portal.provider.v2.render.http.ResourceRenderer">
  <resourcePath>/htdocs/mycacheportlet/MyCachePortletShowPage.jsp
  </resourcePath>
  <pageExpires>1</pageExpires>
</showPage>
```

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

2. Test that the portlet is cached for 1 minute by adding some JSP code to your show page. You can simply add the current time to your JSP.

```
<%@page contentType="text/html; charset=windows-1252"
  import="oracle.portal.provider.v2.render.PortletRenderRequest"
  import="oracle.portal.provider.v2.http.HttpCommonConstants"
  import="java.Util.Date"
  import="java.text.DateFormat"
  %>

<%
  PortletRenderRequest pReq = (PortletRenderRequest)
    request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
  DateFormat df = DateFormat.getDateInstance(DateFormat.LONG,
    DateFormat.LONG,pReq.getLocale());
  String time = df.format(new Date());
  %>

<P>Hello <%=pReq.getUser().getName() %>.</P>
<P>This is the <b><i>Edit</i></b> render mode!</P>
<P>This information is correct as of <%=time%>.</P>
```

When viewing the portlet, you see that the time (including seconds) is constant for 1 minute. After the time has expired, the portlet displays the most current time and a new cache is set.

7.2.8.4 Adding Invalidation Based Caching

When using OracleAS Web Cache, requests for content are sent via HTTP and content is either returned from the cache or the HTTP request is forwarded to the originator of the content. When content is returned to OracleAS Web Cache, it is added to the cache before being returned to the requestor. Cache content is invalidated by sending invalidation requests directly to OracleAS Web Cache. PDK-Java uses the Java API for Web Cache (JAWC) to generate invalidation requests. This section describes how to configure OracleAS Web Cache and use the invalidation-based caching sample that comes with PDK-Java.



Not all requests sent to OracleAS Web Cache are cached. In order for the content to be cached, the content must include directives that tell OracleAS Web Cache to cache the content. Usually OracleAS Web Cache uses the URL associated with the request as the cache key, but you can specify additional keys by setting special HTTP headers, known as surrogate control headers, on the response.

To configure a Java portlet to use invalidation-based caching, you do the following:

- [Configuring OracleAS Web Cache](#). Refer to *Oracle Application Server Web Cache Administrator's Guide* for more information.
- [Configuring the Provider Servlet](#)
- [Defining the OracleAS Web Cache Invalidation Port](#)
- [Configuring the XML Provider Definition](#)
- [Manually Invalidating the Cache](#)

7.2.8.4.1 Configuring the Provider Servlet To enable invalidation-based caching, you must switch it on at the provider servlet level. The flag is set in an initialization parameter inside the PDK-Java Web application deployment descriptor, `web.xml`. For example:

```
<servlet>
...
  <servlet-class>oracle.webdb.provider.v2.adapter.SOAPServlet</servlet-class>
  <init-param>
    <param-name>invalidation_caching</param-name>
    <param-value>true</param-value>
  </init-param>
</servlet>
```

If the flag is not defined here, then invalidation-based caching is switched off. The status of this flag can easily be checked by displaying the provider's test page. For example:

```
http://<provider_hostname>:<port>/jpdk/providers/webcache/MyWebPProvider
```

7.2.8.4.2 Defining the OracleAS Web Cache Invalidation Port If you are using an Oracle Application Server installation type where PDK-Java was automatically pre-installed (for example, an OracleAS Portal and Wireless type installation), you should find that OracleAS Web Cache invalidation settings have already been preconfigured in `MID_TIER_ORACLE_HOME/portal/conf/cache.xml`. In this case, you can safely ignore the instructions in this section and proceed to [Section 7.2.8.4.3, "Configuring the XML Provider Definition"](#). Otherwise, you will need to configure the invalidation portlet for OracleAS Web Cache.

First, you need the user name and password for the invalidation port(s) of the OracleAS Web Cache instance(s) associated with your application server. After you obtain those, use the provided `oracle.webdb.provider.v2.cache.Obfuscate` Java utility to convert the username and password into an obfuscated string of the format required by the JAWC API. In a default Oracle Application Server installation, the user name for the invalidation port is usually `invalidator` and the password is usually the same as the application server administrator's password. For example, suppose you installed Oracle Application Server in `D:\as904`, with an invalidation port user name of `invalidator` and a password of `welcome`. You would run the following command:

Note: The command that follows assumes that `pdkjava.jar` is present in `ORACLE_HOME/portal/jlib` and `jawc.jar` is present in `ORACLE_HOME/webcache/jlib`, as required by the PDK-Java installation guide.

If you are using a standalone Oracle Application Server Containers for J2EE installation, you need to substitute in the path to the java executable an external Java 2 SDK installation.

```
D:\as904\jdk\bin\java -classpath D:\as904\portal\jlib\pdkjava.jar
oracle.webdb.provider.v2.cache.Obfuscate invalidator:welcome
```

If successful, the command should print a hexadecimal string like the following:

```
0510198d5df8efd5779406342be2528aa0cccb179ea6b77baf49f019f5075a3a11
```

Now, use this information to create a JAWC configuration file, `cache.xml`, which specifies one or more OracleAS Web Cache instances and their invalidation ports. For example:

```
<?xml version="1.0">
<webcache>
<invalidation
  host=cache.mycompany.com
  port=4001
  authorization="0510198d5df8efd5779406342be2528aa0cccb179ea6b77baf49f019f5075a3a11" />
</webcache>
```

JAWC finds this configuration file using the system property `oracle.http.configfile`. To set this system property for an Oracle Application Server Containers for J2EE instance within an Oracle Application Server installation, simply add an appropriate line to the `oc4j.properties` file for the particular instance in which PDK-Java is installed (for example, `MID_TIER_ORACLE_HOME/j2ee/OC4Jinstance/config/oc4j.properties`) and then restart that instance. For example:

```
oracle.http.configfile=fully_qualified_filename
```

If you are running Oracle Application Server Containers for J2EE standalone, you can specify the option in the command line you use to start it.

```
java -Doracle.http.configfile=<fully_qualified_filename> -jar oc4j.jar
```

Note: Since the location of the cache configuration file is defined as a system property, only one cache may be defined per server instance. It is not possible to have two different Web Provider instances behind separate OracleAS Web Cache configurations.

7.2.8.4.3 Configuring the XML Provider Definition Using a combination of tags in `provider.xml`, you can activate automatic invalidation-based caching for an entire portlet or some of its pages. To turn on automatic invalidation-based caching, you need to declare it as follows either at the level of individual pages or the renderer, to indicate that invalidation-based caching should be activated for all pages:

```
<useInvalidationCaching>true</useInvalidationCaching>
```

If your portlet supports personalization (via the Edit or Edit Defaults modes), you may also want to declare `<autoInvalidate>true</autoInvalidate>` for your

renderer. This declaration causes invalidation of all the cached content for the portlet when you click OK or Apply in Edit mode, thus causing new markup to be generated based on the personalized settings.

The maximum time for holding the page in the cache is the minimum of the following:

- Maximum expiry time from OracleAS Portal defined in the Cache tab of the Global Settings page.
- Web Provider default (24 hours) if no maximum expiry time is specified by OracleAS Portal.
- The time in minutes of the `<pageExpires>` tag, if present.

The following excerpt from `provider.xml` specifies that this portlet shall be cached for up to 5 minutes and shall be automatically invalidated upon personalization:

```
<renderer class="oracle.portal.provider.v2.renderer.RenderManager">
  <contentType>text/html</contentType>
  <renderContainer>true</renderContainer>
  <autoRedirect>true</autoRedirect>
  <autoInvalidate>true</autoInvalidate>
  <showPage class="oracle.portal.provider.v2.renderer.http.ResourceRenderer">
    <resourcePath>/htdocs/invalidation/invalidation1.jsp</resourcePath>
    <useInvalidationCaching>true</useInvalidationCaching>
    <pageExpires>5</pageExpires>
  </showPage>
  <editPage class="oracle.portal.sample.v2.devguide.invalidation.
    InvalidationEditRenderer"/>
</renderer>
```

Note: The `pageExpires` tag is also used for normal expiry based caching. These two forms of caching are mutually exclusive. Invalidation-based caching takes place in an OracleAS Web Cache instance located in the same place as the Web provider. Pages stored using expiry based caching are cached in the middle tier of OracleAS Portal.



For more information on the syntax of `provider.xml`, refer to the **provider JavaDoc** on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

7.2.8.4.4 Manually Invalidating the Cache You may want the cached version of the portlet invalidated when a request is processed or information somewhere has been updated. In these cases, you may want to manually invalidate the cache.

The invalidation-based caching portlet sample included with PDK-Java contains a single portlet that displays the time the content was cached and a link to trigger an invalidation request. The first time a page request is made to the Web provider via the cache, the response is cached. Subsequent requests for the portlet content are fulfilled by returning content from OracleAS Web Cache. When you click the link at the bottom of the portlet an invalidation request is generated by the provider that removes the portlet from the cache. The next request for the portlet is forwarded to the provider and the provider generates a new portlet with the current time.

To perform invalidation calls to OracleAS Web Cache, first you need to have a handle to a `ServletInvalidationContext` object. You can get this handle by calling the static `getServletInvalidationContext()` method of the `ServletInvalidationContextFactory` class.

Once you have the handle, you need to specify the cache key. In the cache key, you need to specify whether you want to invalidate a particular portlet instance, all the instances of a portlet, or all the portlets managed by a provider. To perform this task, you use the methods of the `ServletInvalidationContext` class or the methods of its super class, `InvalidationContext`. This is where you can specify whether the portlet should be cached for this particular user (USER level). If there is no user specified in the cache key, then the cached content is returned to all users, which means you are using SYSTEM level caching.

The example below invalidates a portlet instance and calls the `setFullProviderPath()` and `setPortletReference()` methods. When the caching key is set, you call the `invalidate()` method on the `InvalidationContext` object that sends the invalidation message to OracleAS Web Cache.

```
ServletInvalidationContext inv =
    ServletInvalidationContextFactory.getServletInvalidationContext();
inv.setFullProviderPath
    ((ServletPortletRenderRequest)pReq);
inv.setPortletReference
    (pReq.getPortletReference());
int num = inv.invalidate();
```

Review the Web cache sample provider for more information.

7.2.8.5 Adding Validation-Based Caching

Adding validation-based caching requires slightly more effort, but gives you explicit control over exactly which requests to your provider are cache hits. As an example, you may want to update the cache only when data within the portlet has changed. To implement this algorithm, you need to override the `prepareResponse` method. The signature of the `BaseManagedRenderer.prepareResponse` method is:

```
public boolean prepareResponse(PortletRenderRequest pr)
    throws PortletException,
        PortletNotFoundException
```

In your version of `prepareResponse()`, you need to do the following:

- Retrieve the cached version identifier set by the PPE in the render request by calling the `HttpPortletRendererUtil.getCachedVersion()` method:

```
public static java.lang.String getCachedVersion
    (PortletRenderRequest request)
```

- If the portlet finds the previously cached version valid, the appropriate header has to be set by calling the `HttpPortletRendererUtil.useCachedVersion()` method. It also instructs the `RenderManager` that it won't be necessary to call `renderBody()` to render the portlet body.

```
public static void useCachedVersion(PortletRenderRequest request)
```

Otherwise, use `HttpPortletRendererUtil.setCachedVersion()` to generate a new version of the portlet, which will be cached. It also indicates to the PPE that the `renderBody()` method has to be called to regenerate the portlet content.

```
public static void setCachedVersion(PortletRenderRequest request,
    java.lang.String version,
    int level)
    throws java.lang.IllegalArgumentException
```

For validation-based caching, you need not update `provider.xml`. You can view the portlet by refreshing the page or adding the portlet to a page and updating the content. If the content has changed, the portlet shows the new content. If the content has not changed, a cached version of the portlet is displayed.

7.2.9 Enhancing Portlets for Mobile Devices

This section explains how to go about enhancing a PDK-Java portlet for a mobile device. Before proceeding with this section, you should familiarize yourself with the guidelines for building mobile-enabled portlets, [Section 6.1.3, "Guidelines for Mobile Portlets"](#), and the methods of building portlets with PDK-Java, [Section 7.2, "Enhancing PDK-Java Portlets"](#).

To properly build a portlet for a mobile device, do the following:

1. Create a JSP to generate the OracleAS Wireless XML in response to the show request for the portlet. The portlet's JSPs are managed and controlled by the built in renderer,

```
oracle.portal.provider.v2.render.http.ResourceRenderer.
```

With this renderer, you can define distinct resources (JSPs) per Show mode as well as which JSP to call for each Show mode. Hence, you can define one JSP to handle the Show mode when the requested content is HTML and another when the requested content is OracleAS Wireless XML. For example, this capability enables you to put the lottery portlet's mobile rendition in a separate JSP. In this sample, `mlotto.jsp` generates the mobile rendition.

Note the `contentType` declaration in the first line of the source code. The content type of the JSPs response is set to `text/vnd.oracle.mobilexml`. This is the MIME type name for OracleAS Wireless XML. All mobile responses must set their content type to this value to work properly.

```
<%@ page session="false" contentType="text/vnd.oracle.mobilexml" %>
<%@ page import="oracle.portal.sample.v2.devguide.lottery.LottoPicker" %>
<% LottoPicker picker = new LottoPicker();
    picker.setIdentity(request.getRemoteAddr() ); %>
<SimpleText>
    <SimpleTextItem />
    <SimpleTextItem>Your numbers:</SimpleTextItem>
    <SimpleTextItem />
    <SimpleTextItem HALIGN="CENTER" >
        <%
            int [] picks = picker.getPicks();
            for (int i = 0; i < picks.length; i++) {
                out.print(picks[i] + " ");
            }
            out.println("");
        %>
    </SimpleTextItem>
</SimpleText>
```

2. Modify `provider.xml` by adding the `acceptContentType` tag in the portlet definition to indicate that the portlet can generate OracleAS Wireless XML responses. Each `acceptContentType` tag defines a distinct content type that the portlet can render. The value is the MIME type of the content. In this case the lottery portlet declares that it can generate HTML (`text/html`) and OracleAS Wireless XML (`text/vnd.oracle.mobilexml`).

```
<acceptContentType>text/html</acceptContentType>
```



```
<acceptContentType>text/vnd.oracle.mobilexml</acceptContentType>
```

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

3. Declare the mapping of JSP renderers to Show modes in `provider.xml`.

You need to define a render handler for the pertinent Show modes by content type. One `showPage` declaration identifies a JSP that renders the HTML response and another one identifies the JSP that renders the OracleAS Wireless XML response. Note that the class attribute is now required, whereas, in a simpler case, it could allow the class to default. You express the association of a particular JSP to a particular content type through the `resourcePath` and `contentType` tags inside the `showPage` declaration:

- `resourcePath` defines the JSP used to render this mode.
- `contentType` defines the response type of this JSP.

When the `ResourceRenderer` receives a show request for the lottery portlet it invokes `lotto.jsp` to render the HTML response and `motto.jsp` for OracleAS Wireless XML. The following code illustrates how you express this relationship in `provider.xml`:

```
<renderer class="oracle.portal.provider.v2.render.RenderManager">
  <contentType>text/html</contentType>
  <renderContainer>true</renderContainer>
  <showPage
    class="oracle.portal.provider.v2.render.http.ResourceRenderer">
    <resourcePath>/htdocs/lottery/lotto.jsp</resourcePath>
    <contentType>text/html</contentType>
  </showPage>
  <showPage
    class="oracle.portal.provider.v2.render.http.ResourceRenderer">
    <resourcePath>/htdocs/lottery/motto.jsp</resourcePath>
    <contentType>text/vnd.oracle.mobilexml</contentType>
  </showPage>
  ...
</renderer>
```

Note: The `ResourceRenderer` (and any portlet) determines the type of request it has received by the request's `Accept` header. The `Accept` header is a standard HTTP header that defines the acceptable response types for a given request. It may be a list with multiple values if multiple content types are acceptable. When there are multiple values, they are listed in order from most to least preferred. OracleAS Portal controls the values passed to the portlet in the `Accept` header. In the case of an HTML request, the `Accept` header is:

```
text/html, text/xml, text/vnd.oracle.mobilexml
```

These values indicate that OracleAS Portal prefers an HTML response but also accepts XML and OracleAS Wireless XML.

For mobile requests, the `Accept` header is:

```
text/vnd.oracle.mobilexml, text/xml
```

These values indicate that OracleAS Portal prefers OracleAS Wireless XML but also accepts general XML that contains a stylesheet reference that transforms to OracleAS Wireless XML.

The `ResourceRenderer` maps requested content type to the specific resource renderer by working through the `Accept` list in preference order. Once it finds a match between an acceptable response type and a registered renderer, it dispatches the request to the resource. For example, for HTML requests the `ResourceRenderer` will match the first entry, `text/html`, to the declaration that defines `lotto.jsp` as the `text/html` handler. Likewise, when a mobile request is received, the `ResourceRenderer` matches the first entry, `text/vnd.oracle.mobilexml`, to the declaration that defines `mlotto.jsp` as the `text/vnd.oracle.mobilexml` handler.

4. Declare a short title. A short title is the short form of a portlet's name and is for use where display space is limited. Specifically, OracleAS Portal uses it when rendering portlets as menu items in the page menu generated in response to a mobile request. If the portlet has registered a short title, OracleAS Portal uses that as the menu item label. Otherwise, it uses the portlet's standard title. To declare a short title, you include the `shortTitle` tag in the portlet's metadata section in `provider.xml`:

```
<portlet class="oracle.portal.provider.v2.DefaultPortletDefinition">
  <id>2</id>
  <name>Lottery</name>
  <title>Lottery Portlet</title>
  <shortTitle>Lottery</shortTitle>
  ...
</portlet>
```

5. Support short title personalization. Because the portlet's short title is presented to the user as the menu item label that references the portlet instance on the page, we recommend that all portlets allow users to personalize the short title. PDK-Java provides a base data class that manages both the short and standard title:

```
oracle.portal.provider.v2.personalize.NameValuePersonalizationObject
```

The `NameValuePersonalizationObject` manages both the title and short title. It contains methods for getting and setting the values. The personalization

code is split into two parts, form display and form submit. The logic first acquires the current data personalization object. Next, it checks to see if this is a form submit. If so, it updates the values in the data personalization object, writes them back to the repository, and returns. PDK-Java subsequently redirects back to this same form but without the parameters that indicate it is a form submit causing the form to redisplay with the new values. In this situation, the JSP responds with the personalization page including the current personalization values.

We recommend that portlets use this class or subclass to inherit this base support. The only personalization the lottery sample supports is these two titles. Hence, it uses the `NameValuePersonalizationObject` class directly in `custom.jsp`:

```
<%@ page session="false" import="oracle.portal.provider.v2.*" %>
<%@ page import="oracle.portal.provider.v2.http.*" %>
<%@ page import="oracle.portal.provider.v2.render.*" %>
<%@ page
    import="oracle.portal.provider.v2.personalize.NameValuePersonalizationObject"
%>
<!-- This page both displays the personalization form and processes it.
     We display the form if there isn't a submitted title parameter,
     else we apply the changes --%>
<%
    PortletRenderRequest portletRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    String title = request.getParameter("lotto_title");
    String sTitle = request.getParameter("lotto_short_title");
    String actionParam =
PortletRendererUtil.getEditFormParameter(portletRequest);
    String action = request.getParameter(actionParam);
    NameValuePersonalizationObject data = (NameValuePersonalizationObject)
        PortletRendererUtil.getEditData(portletRequest);
    // Cancel automatically redirects to the page
    // -- so will only receive 'OK' or 'APPLY'
    if (action != null) {
        data.setPortletTitle(title);
        data.setPortletShortTitle(sTitle);
        PortletRendererUtil.submitEditData(portletRequest, data);
        return;
    }
    // otherwise just render the form
    title = data.getPortletTitle();
    sTitle = data.getPortletShortTitle();
%>
<TABLE BORDER="0">
    <TR>
        <TD WIDTH="20%">
            <P ALIGN="RIGHT">Title:
        </TD>
        <TD WIDTH="80%">
            <INPUT TYPE="TEXT" NAME="lotto_title"
                VALUE="<%= title %>" SIZE="20">
        </TD>
    </TR>
    <TR>
        <TD WIDTH="20%">
            <P ALIGN="RIGHT">Short Title:
        </TD>
        <TD WIDTH="80%">
            <INPUT TYPE="TEXT" NAME="lotto_short_title" VALUE="<%= sTitle %>"
                SIZE="20" MAXLENGTH="20">
    </TD>
    </TR>
</TABLE>
```

```

        </TD>
    </TR>
</TABLE>

```

- Support the rendering of personalized short titles. Once you add short title personalization, a portlet must take responsibility for rendering the portlet as a menu item in the mobile page response. Because of the small screen displays on mobile devices, portlets aren't rendered together. Users are presented with a menu of links to portlets on a given page. The user navigates to each portlet via this menu to see the content. To better support this model, OracleAS Portal provides Link mode, where portlets generate Link references to themselves.

For HTML requests, Link mode generates an anchor tag, a `href`. For mobile requests, Link mode generates a `simpleHref` tag. Currently, OracleAS Portal only sends a Link mode request when assembling a mobile page response. Hence, you only need to support rendering the `text/vnd.oracle.mobilexml` content type for Link mode. If your portlet also has an HTML rendition, we recommend you also support HTML Link mode.

The lottery portlet example implements each Link rendition in a distinct JSP:

- `milotto.jsp` contains the code to generate a `text/vnd.oracle.mobilexml` Link response.
- `anchorlotto.jsp` contains the code to generate a `text/html` Link response.

The code for each is almost identical. Since the purpose of supporting Link mode is to render the personalized short title, the code first acquires the short title from the repository. It then generates the appropriate link tag for the requested markup. The acquired short title is rendered as the link's label. Since OracleAS Portal is responsible for creating the URL that references any particular usage of a portlet on a page, OracleAS Portal creates the URL used in the link and passes it to the portlet, which then uses the URL to create the link. The URL for the link is retrieved from the request's `PageURL` parameter. The code for `milotto.jsp` is as follows:

```

<%@ page session="false" contentType="text/vnd.oracle.mobilexml" %>
<%@ page import="oracle.portal.provider.v2.http.HttpCommonConstants" %>
<%@ page import="oracle.portal.provider.v2.render.*" %>
<%@ page
    import="oracle.portal.provider.v2.personalize.NameValuePersonalizationObject"
%>
<%@ page import="oracle.portal.utils.xml.v2.XMLUtil" %>
<%
    PortletRenderRequest portletRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    NameValuePersonalizationObject data = (NameValuePersonalizationObject)
        PortletRenderUtil.getEditData(portletRequest);
    String title = data.getPortletShortTitle();
    // if short title is empty then use the title
    if (title == null || title.length() == 0)
        title = data.getPortletTitle();
%>
<SimpleHref target="<%= XMLUtil.escapeXMLAttribute(
    portletRequest.getRenderContext().getPageURL() %>">
    <%= XMLUtil.escapeXMLText(title) %>
</SimpleHref>

```

Note: The text being output as the URL and the short title label are passed through special XML escape utilities. Because `text/vnd.oracle.mobilexml` is an XML content type, generated responses must adhere to XML rules, which require the escaping of specific characters. Unless generating static text, we recommend that all text be escaped using the two supplied utilities. The reason for two utility methods is that the set of characters requiring escape varies depending upon whether the text is a tag attribute value or a tag value.

7. Declare support for Link mode. Once you have implemented Link mode, you must update `provider.xml` to indicate the presence of Link mode. You declare Link mode by adding code similar to the following to `provider.xml`:

```
<portlet class="oracle.portal.provider.v2.DefaultPortletDefinition">
  <id>2</id>
  <name>Lottery</name>
  ...
  <showLink>true</showLink>
  <showEdit>true</showEdit>
  <showEditToPublic>>false</showEditToPublic>
  ...
</portlet>
```

8. Bind the JSPs to the Link mode. The portlet must declare the mapping between the Show modes and the JSP renderers. The syntax for Link mode is similar to that for Show mode.

```
<portlet class="oracle.portal.provider.v2.DefaultPortletDefinition">
  <id>2</id>
  <name>Lottery</name>
  ...
  <renderer class="oracle.portal.provider.v2.render.RenderManager">
    <contentType>text/html</contentType>
    <renderContainer>true</renderContainer>
    <linkPage
      class="oracle.portal.provider.v2.render.http.ResourceRenderer" >
      <resourcePath>/htdocs/lottery/anchorlotto.jsp</resourcePath>
      <contentType>text/html</contentType>
    </linkPage>
    <linkPage
      class="oracle.portal.provider.v2.render.http.ResourceRenderer" >
      <resourcePath>/htdocs/lottery/milotto.jsp</resourcePath>
      <contentType>text/vnd.oracle.mobilexml</contentType>
    </linkPage>
    ...
  </renderer>
  ...
</portlet>
```

7.2.9.1 Accessing Configuration, User, and Device Information

To better support mobile devices, OracleAS Portal passes extra information to the portlet for use in generating its response. This information falls into three major categories:

- [Configuration Data](#)

- [User Data](#)
- [Device Information](#)

7.2.9.1.1 Configuration Data OracleAS Portal sends a flag that indicates whether the mobile function is enabled when requesting that the portlet render its personalization or edit pages. Portlets can use this information to exclude or include mobile specific attributes in their personalization pages as appropriate.

The portlet accesses this information via the `PortletRenderRequest` object:

```
...
if (portletRequest.getPortalConfig().isMobileEnabled()) {
    ...
}
...
```

7.2.9.1.2 User Data OracleAS Wireless adds the user location to the requests it forwards to OracleAS Portal for response. This user location information is determined by the user's actual location, if the user's device has this support, or a profiled location. The user location is exposed by the `ProviderUser` object, which you can access from the `PortletRenderRequest` object. Portlets that are location aware can use this information to adjust the content they generate.

```
...
UserLocation location = portletRequest.getUser().getLocation();
if (location != null) {
    ...
}
...
```

7.2.9.1.3 Device Information On each request, OracleAS Portal sends characteristics about the requesting device to the portlet. This information is sent for all portlet requests, not just mobile requests. The information classifies the type of device making the request, its layout orientation, the maximum response size the device can handle, and an indication of whether the connection with the device is secure. [Table 7-3](#) describes the available device types.

Table 7-3 Device Classes

Class	Description
voice	Indicates a voice-only device, such as a normal telephone calling a voice access number.
micromessenger	Indicates text messaging devices, such as SMS phones or pagers.
messenger	Indicates general messaging devices, such as e-mail.
microbrowser	Indicates a small size display device, which supports a markup browser, such as a WAP phone.
pdabrowser	Indicates a medium size display device, such as a Palm or PocketPC.
pcbrowser	Indicates a large size display device used with desktop browsers.

Portlets may choose to alter the layout or representation of the content in their response based on the type of device making the request. For example, a portlet may break a wide table into a series of screens that link column groups together for small screen devices.

The maximum response size is a hint that a portlet can use to constrain the amount of data it returns. The size is expressed in bytes. A maximum response size of 0 means the size is unknown.

The portlet accesses this information via the `PortletRenderRequest` object.

```
...
DeviceInfo deviceInfo = portletRequest.getDeviceInfo();
switch (deviceInfo.getDeviceClass()) {
    case DeviceInfo.DeviceClass.MICROBROWSER:
        renderMicroBrowser(portletRequest);
        break;
    default:
        renderDefault(portletRequest);
        break;
}
...
```

7.2.9.2 Modifying Navigation for Mobile Portlets

Much of the information in [Section 7.2.3.3.5, "Implementing Navigation within a Portlet"](#) is also relevant to the development of mobile portlets, but some of the utilities referenced are specific to portlets that render HTML. For portlets that render `SimpleResult`, the following equivalent utilities are available.

Table 7-4 *Equivalent HTML and SimpleResult Utilities*

HTML Utilities	SimpleResult Utilities
<code>UrlUtils.constructHTMLLink</code>	<code>UrlUtils.constructMXMLLink</code>
<code>UrlUtils.htmlFormHiddenFields</code>	<code>UrlUtils.mxmlFormHiddenFields</code>
<code>UrlUtils.emitHiddenField</code>	<code>UrlUtils.emitMxmlHiddenField</code>

The following example illustrates how to adapt the thesaurus sample for a mobile-enabled portlet. Note that, when deployed as a mobile portlet, both sets of JSPs (HTML and `SimpleResult`) are deployed. These JSPs complement their HTML counterparts, they do not replace them. Notice also that the JSPs use `SimpleResult` as their markup and the value of the navigation parameter has changed such that it points to the next mobile JSP rather than the next desktop JSP.

mThesaurusForm.jsp:

```
<%
    PortletRenderRequest pRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    String paramNameQ = "q";
    String qualParamNameQ =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameQ);
%>
<!-- Output the MXML content -->
<SimpleText>
    <SimpleTitle>Thesaurus</SimpleTitle>
    <SimpleTextItem>Enter the word you wish to search for:</SimpleTextItem>
    <SimpleForm
        method="POST"
        target="<%= UrlUtils.htmlFormActionLink(pRequest,UrlUtils.PAGE_LINK) %>"
        <%=UrlUtils.mxmlFormHiddenFields
            (pRequest.getRenderContext().getPageURL()) %>
        <%= UrlUtils.emitMxmlHiddenField(
            HttpPortletRendererUtil.portletParameter(request, "next_page"),
```

```

        "htdocs/path/mThesaurusLink.jsp" ) %>
        <SimpleFormItem type="text" size="20" name="<%= qualParamNameQ %>"
            value="" />
    </SimpleForm>
</SimpleText>

```

mThesaurusLink.jsp:

```

<%
    PortletRenderRequest pRequest = (PortletRenderRequest)
        request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);
    String paramNameQ = "q";
    String paramNameNextPage = "next_page";
    String qualParamNameQ =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameQ);
    String qualParamNameNextPage =
        HttpPortletRendererUtil.portletParameter(pRequest, paramNameNextPage);
    String paramValueQ = pRequest.getQualifiedParameter(paramNameQ);
%>
<!-- Output the MXML content -->
<SimpleText>
    <SimpleTitle>Words similar to <%= paramValueQ %></SimpleTitle>
<%
    Thesaurus t = new Thesaurus();
    String[] relatedWords = t.getRelatedWords(paramValueQ);
    NameValue[] linkParams = new NameValue[2];
    linkParams[0] = new NameValue(
        qualParamNameNextPage, "htdocs/path/mThesaurusLink.jsp");
    for (int i=0; i<relatedWords.length; i++)
    {
        linkParams[1] = new NameValue(
            qualParamNameQ, relatedWords[i]);
    }
%>
    <SimpleTextItem>
        <%= relatedWords[i] %>
        <SimpleBreak/>
        <%= UrlUtils.constructMXMLLink(
            pRequest,
            pRequest.getRenderContext().getPageURL(),
            "(words related to " + relatedWords[i] + ")",
            "",
            linkParams,
            true,
            true)%>
    </SimpleTextItem>
<%
    }
%>
    <SimpleTextItem>
        <SimpleHref target="<%=XMLUtil.escapeXMLAttribute(
            pRequest.getRenderContext().getPageURL())%>">
            Reset Portlet
        </SimpleHref>
    </SimpleTextItem>
</SimpleText>

```

7.2.10 Writing Multilingual Portlets

This section shows you how to build a Java portlet that can be rendered in different languages. The language used in your portlet will depend upon on the language setting that has been chosen in the portal that is displaying it.

Once you have completed this section you will be able to write portlets that support as many or as few languages as you wish. You will also be able to convert your existing portlets to support multiple languages. Once a portlet is written to support multiple languages, it is easy to plug in new languages. The basic model for multilingual Java portlets is similar to the standard Java Internationalization model. If you already know about Java Internationalization, you should find this process very familiar.

7.2.10.1 Assumptions

1. You have followed through and understood [Section 6.6.2, "Building PDK-Java Portlets"](#).
2. You built a portlet using the wizard and successfully added it to a page.

7.2.10.2 Internationalizing Your Portlet

- [Providing Translations for Portlet Content](#)
- [Providing Translation for Portlet Attributes](#)

7.2.10.2.1 Providing Translations for Portlet Content In [Section 6.6.2, "Building PDK-Java Portlets"](#), you created a portlet using the Java Portlet Wizard. The basic message created by the wizard is only available in one language and the text displayed is hard-coded in to the portlet's renderer class. To make your portlets available in multiple languages, you have to store such language dependent elements in their own *resource bundles*.

Creating Resource Bundles

For each language you want your portlet to be available in, you will need a resource bundle. You will also need to create a resource bundle to use when there is no resource bundle corresponding to the language setting chosen in the portal.

- **Create a Default Resource Bundle**
 1. In Oracle JDeveloper, create a Java class called `MyProviderBundle` that extends `ListResourceBundle` from the `java.util` package. The class should contain a multi-dimensional array of objects that holds key-value pairs representing each of the language dependent elements from your JSP show page. This implementation is demonstrated in the following code:

```
package mypackage2;
import java.util.ListResourceBundle;
public class MyProviderBundle extends ListResourceBundle
{
    public static String HELLO_MSG = "MyPortletHelloMessage";
    public static String INFO_MSG = "MyPortletInfoMessage";
    public Object[][] getContents()
    {
        return contents;
    }
    static private final Object[][] contents =
    {
        {HELLO_MSG, "Hello"},
        {INFO_MSG, "This is the show page of the portlet and it is being generated"}
```

```

    in the default language!"}
};
}

```

2. Save `MyProviderBundle`.

■ Creating Resource Bundles for Other Supported Languages

Now you must create a resource bundle class for each language you want your portlet to support. Each of these classes must be named the same as your default resource bundle class, but with a language code appended to the end. For example, if you want to support the French language, create a Java class named `MyProviderBundle_fr`. The language code `fr` is the same as the code that will be used by the *locale* object in the portal if the language setting is set to French

For more information on Locales, see the JavaDoc for `java.util.Locale`:

<http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDK/jpdk/v2/apidoc/index.html>

When you change the language setting in OracleAS Portal, you change the value of the current locale object and therefore the locale object's language code. These language codes adhere to the ISO:639 codes for representation for names of languages.

1. To create a French resource bundle, create a Java class named `MyProviderBundle_fr`, as described above.
2. Using your default resource bundle as a template, replace the English language strings with their French equivalents. An example is given below:

```

package mypackage2;

import java.util.ListResourceBundle;
public class MyProviderBundle_fr extends
ListResourceBundle
{
    public Object[][] getContents()
    {
        return contents;
    }
    static private final Object[][] contents =
    {
        {MyProviderBundle.HELLO_MSG, "Bonjour"},
        {MyProviderBundle.INFO_MSG, "Cette page est le 'show mode' de la portlet
        et est generee dans la langue par default."}
    };
}

```

3. Save `MyProviderBundle_fr`.
4. Repeat steps 1 through 3 for every language that you wish to create a resource bundle for, updating the class name with the appropriate language code and the message strings with their equivalent in the appropriate language.

Updating Your Renderer

To make use of the resource bundles you just created, you need to edit the JSP show page and replace the hard-coded messages with references that will pickup the messages at run time from the resource bundle that corresponds most closely with the locale object of the portal.



1. Open the JSP that represents your show page and change the following:

```
<%@page contentType="text/html; charset=windows-1252"
import="oracle.portal.provider.v2.render.PortletRenderRequest"
import="oracle.portal.provider.v2.http.HttpCommonConstants"
import="java.util.ResourceBundle"
%>

<%
PortletRenderRequest pReq = (PortletRenderRequest)
request.getAttribute(HttpCommonConstants.PORTLET_RENDER_REQUEST);

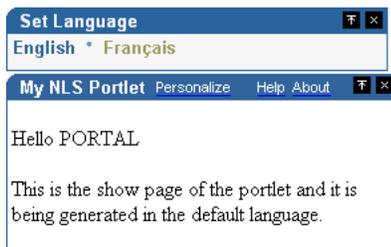
<-- Get a resource bundle object for the current language. -->
ResourceBundle b =
ResourceBundle.getBundle("mypackage2.MyProviderBundle", pReq.getLocale());
%>

<-- Pull the message from the appropriate resource bundle. -->
<P> <%= b.getString(mypackage2.MyProviderBundle.HELLO_MSG) %>
<%= pReq.getUser().getName() %>.</P>
<P> <%= b.getString(mypackage2.MyProviderBundle.INFO_MSG) %></P>
```

2. Save your JSP page.

Now you can refresh your portlet and view the changes.

Figure 7–11 Portlet in English



To view the French greeting, you set the language in the Set Language portlet to French instead of English.

Figure 7–12 Portlet in French



Notice that the text inside the portlet has changed, but the portlet title remains in the default language, English. You can also have the portlet set the appropriate portlet attributes (such as portlet name, portlet title, and portlet description) by pointing to a resource bundle from `provider.xml`, as described in the next section.

7.2.10.2.2 Providing Translation for Portlet Attributes In your provider's definition file, `provider.xml`, a number of attributes describing your portlet are defined such as the portlet's name and description, these are used in places, for example in your portlet's title bar in Show mode and so should be translated, too. There are two different ways

of providing these translations, which one you choose is up to you. Both of these methods are outlined below:

- [Method 1: Using Resource Bundles at the Provider Level](#)
- [Method 2: Creating Resource Bundles at Portlet Level](#)

Method 1: Using Resource Bundles at the Provider Level

You can provide translations for your portlet attributes in your resource bundle(s), then specify that you want to use these resource bundles in `provider.xml`, specifying the keys you have used in your resource bundles. Using this method you can use the keys you want to, and as long as you use different keys for each corresponding attribute in your provider's various portlets you can have just one set of resource bundles that all of your provider's portlets can use.

- **Updating Your Resource Bundles**

1. Open your default resource bundle, `MyProviderBundle.java`.
2. Add additional strings to your resource bundle that represent your portlet attributes and then add text for those strings:

```
package mypackage2;

import java.util.ListResourceBundle;
public class MyProviderBundle extends ListResourceBundle
{
    public static String HELLO_MSG = "MyPortletHelloMessage";
    public static String INFO_MSG = "MyPortletInfoMessage";
    public static String PORTLET_NAME = "FirstPortletName";
    public static String PORTLET_TITLE = "FirstPortletTitle";
    public static String PORTLET_SHORT_TITLE = "FirstPortletShortTitle";
    public static String PORTLET_DESCRIPTION = "FirstPortletDescription";
    public static String TIMEOUT_MESSAGE = "FirstPortletTimeoutMessage";

    public Object[][] getContents()
    {
        return contents;
    }
    static private final Object[][] contents =
    {
        {HELLO_MSG, "Hi"},
        {INFO_MSG, "This is the show page of the portlet and it is being generated
            in the default language!"},
        {PORTLET_NAME, "MyNLSPortlet"},
        {PORTLET_TITLE, "My NLS Portlet"},
        {PORTLET_SHORT_TITLE, "MyNLSPortlet"},
        {PORTLET_DESCRIPTION, "My first ever NLS portlet, using my
            MyPortletShowPage.jsp"},
        {TIMEOUT_MESSAGE, "Timed out waiting for MyNLSPortlet"}
    };
}
```

3. Save `MyProviderBundle.java`.
4. Open `MyProviderBundle_fr.java`. Change it so that it contains the French strings that match the strings declared in `MyProviderBundle`.

```
package mypackage2;

import java.util.ListResourceBundle;
public class MyProviderBundle_fr extends ListResourceBundle
```

```

{
public Object[][] getContents()
{
return contents;
}
static private final Object[][] contents =
{
{MyProviderBundle.HELLO_MSG, "Bonjour"},
{MyProviderBundle.INFO_MSG, "Cette page est le 'show mode' de la portlet
  et est generee en francais!"},
{MyProviderBundle.PORTLET_NAME, "MaPremierePortlet"},
{MyProviderBundle.PORTLET_TITLE, "Ma Portlet Multi-Langue"},
{MyProviderBundle.PORTLET_SHORT_TITLE, "Ma NLS Portlet"},
{MyProviderBundle.PORTLET_DESCRIPTION, "Ma premiere portlet
  multi-langue, utilisant mon renderer"},
{MyProviderBundle.TIMEOUT_MESSAGE, "Temps d'accès a la portlet
  demandee expire"}
};
}

```

5. Save `MyProviderBundle_fr.java`.

- **Updating provider.xml**

1. Open the XML provider definition file and update it to point to the resource bundle instead of using the hard-coded portlet attribute values.

```

<portlet class="oracle.portal.provider.v2.DefaultPortletDefinition">
  <id>3</id>
  <resource>MyProviderBundle</resource>
  <nameKey>FirstPortletName</nameKey>
  <titleKey>FirstPortletTitle</titleKey>
  <ShortTitleKey>FirstPortletShortTitle</ShortTitleKey>
  <descriptionKey>FirstPortletDescription</descriptionKey>
  <timeout>10</timeout>
  <timeoutMessageKey>FirstPortletTimeoutMessage</timeoutMessageKey>
  <showEditToPublic>>false</showEditToPublic>
  <hasAbout>>true</hasAbout>

```

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html



Method 2: Creating Resource Bundles at Portlet Level

PDK-Java defines a set of resource bundle keys that you can use for providing translations for your portlet attributes. Making use of these keys means that you don't have to specify the resource bundle keys in your `provider.xml` file, as we did in [Method 1: Using Resource Bundles at the Provider Level](#). However, you do have to provide a separate set of resource bundles for each portlet in your provider as the keys you use for each portlet need to be the same, but their values will differ.

- **Updating Your Resource Bundles**

1. Open your default resource bundle, `MyProviderBundle.java`.
2. Remove any changes you made from the previous section, and import `oracle.portal.provider.v2.PortletConstants`. You can then

reference the following constants instead of the strings. You do not have to declare static strings when using `PortletConstants`:

```
{PortletConstants.NAME, "MyNLSPortlet"},
{PortletConstants.TITLE, "My NLS portlet"},
{PortletConstants.SHORTTITLE, "MyNLSPortlet"},
{PortletConstants.DESCRPTION, "My first ever NLS portlet"},
{PortletConstants.TIMEOUTMSG, "Timed out waiting for MyNLSPortlet"}
```

3. Save `MyProviderBundle.java`.

4. Open `MyProviderBundle_fr.java`. Remove the portlet attributes added in the previous section, import `oracle.portal.provider.v2.PortletConstants`, and reference the constants instead of the strings.

```
{PortletConstants.NAME, "MaPremierePortlet"},
{PortletConstants.TITLE, "Ma Portlet Multi-Langue"},
{PortletConstants.SHORTTITLE, "Ma NLS Portlet"},
{PortletConstants.DESCRPTION, "Ma premiere portlet multi-langue,
    utilisant mon renderer"},
{PortletConstants.TIMEOUTMSG, "Temps d'accès à la portlet demandée
    expire"}
```

5. Save `MyProviderBundle_fr.java`.

■ Updating `provider.xml`

1. In `provider.xml`, you need to use only one tag instead of one tag for each string as you did in [Method 1: Using Resource Bundles at the Provider Level](#). Add the tag between the portlet id and the timeout number value.

```
<resource>mypackage2.MyProviderBundle</resource>
```

For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

For more information on Java Internationalization see the *Internationalization trail* of the *Java Tutorial*.



7.2.10.3 Viewing the Portlet

Once you have updated your provider and deployed it to Oracle Application Server Containers for J2EE, refresh the provider and portal page containing your portlet. To see your resource bundles working, add the "Set Language" portlet to your page and try changing the language setting to French. Remember that the default resource bundle is English, and that selecting any other language that doesn't have a corresponding resource bundle will result in the portlet being displayed in English.

7.3 Building Struts Portlets with Oracle JDeveloper

This section describes the framework for building Struts portlets with Oracle JDeveloper for use in OracleAS Portal. You will learn how to build a Struts portlet from an existing application by adding the Struts Tag Library from the Oracle Application Server Portal Developer Kit (version 9.0.4.0.2 or higher) to Oracle JDeveloper, then use the Oracle PDK Java Portlet wizard to create the Java portlet itself.

- [OracleAS Portal and the Apache Struts Framework](#)
- [Creating a Struts Portlet](#)

7.3.1 OracleAS Portal and the Apache Struts Framework

This section discusses the use of the Apache Struts with OracleAS Portal. Struts is an implementation of the Model-View-Controller (MVC) design pattern.

- [Model View Controller Overview](#)
- [Apache Struts Overview](#)
- [OracleAS Portal Integration with Struts](#)
- [Summary](#)

7.3.1.1 Model View Controller Overview

Enterprise applications undertake several distinct tasks:

- Data access
- Business logic implementation
- User interface display
- User interaction
- Application (page) Flow

The MVC (Model View Controller) architecture provides a way of compartmentalizing these tasks, based on the premise that activities, such as data presentation, should be separate from data access. This architecture enables you to easily plug a data source into the application without having to rewrite the user interface. MVC allows the logical separation of an application into three distinct layers: the Model, the View, and the Controller.

The Model

The Model is the repository for the application data and business logic. One facet of the Model's purpose is to retrieve data from and persist data to the database. It is also responsible for exposing the data in such a way that the View can access it, and for implementing a business logic layer to validate and consume the data entered through the View. At the application level, the Model acts as the validation and abstraction layer between the user interface and the business data that is displayed. The database server itself is simply a persistence layer for the Model.

The View

The View is responsible for rendering the Model data using JSPs. The View code does not include a hardcoded application or navigation logic, but may contain some logic to carry out tasks like displaying conditional data based on a user role. When an end user executes an action within the HTML page that the View renders, an event is submitted to the Controller. The Controller then determines the next step.

The Controller

The Controller is the linchpin of the MVC pattern. Every user action carried out in the View is submitted through the Controller. The Controller then performs the next action, based on the content of the request from the browser.

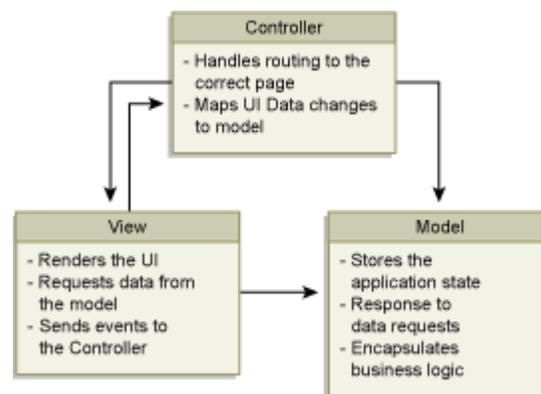
The Controller can be driven in several different ways. For example, you can use URL arguments to route the requests to the correct code. The MVC pattern itself determines the function of the Controller, not how it should work.

Benefits

The MVC architecture provides a clear and modular view of the application and its design. By separating the different components and roles of the application logic, it allows developers to design applications as a series of simple and different components: the Model, the View, and the Controller. This pattern should help to create applications that are easier to maintain and evolve. For example, once you create one view, you can easily create another view using the same business logic. Because of the ease and reusability, the MVC pattern is the most widely used pattern in the context of Web-based application development.

The following diagram shows how the MVC pattern applies to a conventional thin-client Web application:

Figure 7–13 The MVC Pattern



7.3.1.2 Apache Struts Overview

The Apache Struts framework (<http://struts.apache.org>) is one of the most popular frameworks for building Web applications, and provides an architecture based on the JSP Model 2 approach of the MVC design paradigm. In the Model 2 approach, end user requests are managed by a servlet that controls the flow, and uses components such as JavaBeans or EJBs to access and manipulate the data. It then uses JSPs to render the application content in a Web browser. This model differs from JSP Model 1, where the JSPs managed the browser request and data access.

The Struts framework provides its own HTTP Servlet as a controller component. The Struts framework is driven by an XML configuration file that contains the page flow of the application. Struts does not provide the Model, but allows developers to integrate it to any data access mechanism, for example EJBs, TopLink, or JDBC. The most common technology for writing View components is JSP and Struts provides various tag libraries to help in writing these, although some of these tags have now been superseded by the Java Standard Tag Library (JSTL), which may also be used.

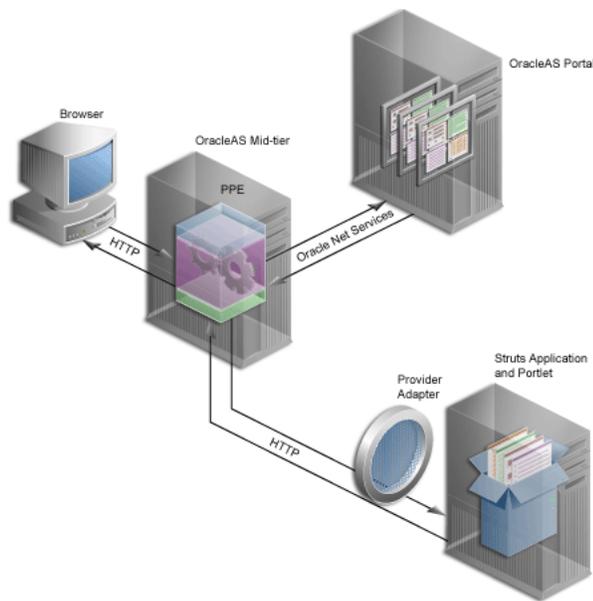
Note: For more information about JSTL and JSF, see the FAQ on the Apache Software Foundation Web site (<http://jakarta.apache.org/struts/faqs/kickstart.html>).

7.3.1.3 OracleAS Portal Integration with Struts

The Oracle Application Server Portal Developer Kit contains numerous examples and documents regarding the usage of the OracleAS Portal APIs, such as personalization and caching. The integration of the application flow and business logic is not part of the portlet APIs. By using the Struts framework, however, you can leverage the MVC architecture to create and publish applications within your enterprise portal.

7.3.1.3.1 Oracle Struts Portlet To create a portlet using the Struts framework, or to generate a portlet from an existing Struts application, you must deploy all the components in the J2EE container. In the context of OracleAS Portal, the Struts application is called by the PPE, and not by the browser as compared to a standalone Struts application. When a portlet show call is made, the page engine sends a request to the Struts portlet renderer, which then forwards the request to the Apache Struts Controller servlet.

Figure 7–14 Integrating Struts Applications with OracleAS Portal



The following code shows a portion of the provider definition file (`provider.xml`):

```
...
<renderContainer>true</renderContainer>
  <renderCustomize>true</renderCustomize>
  <autoRedirect>true</autoRedirect>
  <contentType>text/html</contentType>
  <showPage class="oracle.portal.provider.v2.render.http.StrutsRenderer">
    <defaultAction>showCustomer.do</defaultAction>
  </showPage>
</renderer>
...
```



For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

The `showPage` tag defines the business logic that will be executed in the Show mode of the portlet. The `showPage` of the Struts portlet contains two important components:

1. The `renderer` class (`oracle.portal.provider.v2.render.http.StrutsRenderer`), which receives the portlet request from the PPE and acts as a proxy to forward the request to the Struts Action Servlet.
2. The `defaultAction` tag, which defines the Struts action that will be used by default when the portlet is called for the first time.

The PDK-Java enables you to easily develop a view (Portal View) of your Struts application. This view enforces a consistent look and feel of your Struts portlet using portal styles, and allows the end user to use the application within the portal.

To create a Struts portlet, you must use the OracleAS Portal JSP tags, which are extensions of the default Struts JSP tags. This development process is similar to that of creating a standalone Struts application. To learn how to build a Struts portlet, refer to [Section 7.3.2.1, "Creating a Struts Portlet"](#). Also, since the portlet and struts application must also be in the same Servlet Context, you must create a single Web application that contains both elements. To learn how to easily create this Web application in Oracle JDeveloper, refer to the next section, [Section 7.3.2.1, "Creating a Struts Portlet"](#).

7.3.1.4 Summary

Apache Struts has become the de facto standard for developing MVC-based J2EE applications, because it offers a clean and simple implementation of the MVC design paradigm. This framework enables you, as the portlet developer, to separate the different components of an application, and to leverage the Struts controller to easily publish an existing Struts application to OracleAS Portal without completely changing the existing business logic.

Note: For more information on the Oracle Application Server Portal Developer Kit, see Portal Center (<http://www.oracle.com/technology/products/ias/portals/pdk.html>)

7.3.2 Creating a Struts Portlet

OracleAS PDK contains new extensions to integrate Apache Struts applications. This section explains how to build a portlet from an existing struts application. You can also follow these steps to create a portlet that uses the Model View Controller paradigm. To learn more about the Apache Struts framework, refer to [Section 7.3.1, "OracleAS Portal and the Apache Struts Framework"](#). The PDK-Java extensions described in this section rely on Apache Struts 1.1.

This section contains the following steps:

- [Creating a Struts Portlet](#)
- [Registering the Provider](#)
- [Summary](#)

7.3.2.1 Creating a Struts Portlet

To publish a part of an existing Struts application as portlet, we recommend that you first create a new view to serve as the Portal View of your application. This view uses

existing objects (Actions, ActionForm, and so on) with a new mapping and new JSPs.

Note: Although we recommend that you create a Portal View of your application, you could alternatively replace your application's struts tags with PDK-Java struts tags. This approach enables your application to run both as a standalone struts application and a portlet.

In this example, you will create a portlet that enables you to add a new entry to a Web Logger (Blog).

Figure 7–15 Submitting a Blog



Figure 7–16 Saving a Blog Entry



`prepareNewBlog` is a simple empty action that redirects the request to the `enterNewBlog.jsp` page. This page shows a form for submitting a new blog.

The corresponding entry in the `struts-config.xml` is:

```
<action path="/prepareNewBlog" scope="request"
type="view.PrepareNewBlogAction" >
  <forward name="success" path="/view/enterNewBlog.jsp"/>
</action>
<action path="/saveNewBlog" name="blogForm" scope="request"
type="view.SaveNewBlogAction" input="/view/enterNewBlog.jsp" >
  <forward name="success" path="/view/newBlogConfirmation.jsp"/>
</action>
```

7.3.2.1.1 Create a new flow and view to host the portlet actions To create a new view, first create a new set of ActionMappings (page flow) that will redirect the various actions and requests to Portal-specific JSPs.

```
<action path="/portal/prepareNewBlog" scope="request"
  type="view.PrepareNewBlogAction" >
  <forward name="success" path="/view/portal/enterNewBlog.jsp" />
</action>
<action path="/portal/saveNewBlog" name="blogForm" scope="request"
  type="view.SaveNewBlogAction" input="/view/enterNewBlog.jsp" >
  <forward name="success" path="/view/portal/newBlogConfirmation.jsp" />
</action>
```

As you can see, only the path attributes are modified. The FormBean Action responsible for the application business logic remains unchanged.

7.3.2.1.2 Creating the new JSPs As specified in the previous step, the actions forward the request to new JSPs, which are responsible for rendering the portlet content. Your new portlet view JSPs can share the HTML with the standalone view, but be sure that the portlet:

- Uses Portal styles that enforce a consistent look and feel with the rest of the portal page.
- Contains HTML code that is allowed in HTML table cells (that is, no `<html>`, `<body>`, and `<frame>` tags).
- Renders portal-aware links and forms. This is necessary to ensure that your Struts portlet renders its content inline, thus keeping your users within the context of the portal page by rendering the requested content within the same portlet container.

To achieve inline rendering in your Struts portlet, you must use OracleAS PDK tags:

```
<pdk-struts-html:form action="/portal/saveNewBlog.do">
...
...
</pdk-struts-html:form>
```

During the rendering of the portlet, one of the JSP tags (for example, the `pdk-struts-html:form` tag), submits the form to the Parallel Page Engine (PPE), which then sends the parameters to the Struts portlet. The Struts controller executes the logic behind these actions and returns the next JSP to the portlet within the portal page.

The PDK contains all the Struts tags, and extends all the tags that are related to URLs. The following is a list of the PDK extended tags:

- `form`: creates an HTML form and embeds the portal page context in the form to ensure inline rendering
- `text`: renders fields on the form.
- `link` and `rewrite`: create a link to the portal page, and are required for inline rendering
- `img`: creates an absolute link that points to the Web provider. If you want to use this tag in the context of Internet Web sites that have firewalls, you must make sure the provider is directly accessible from the Internet. If it is not possible, you can deploy the images to the OracleAS Portal middle tier and use the Apache Struts image link to generate a relative link (relative to the portal, not to the application).

Note: You can register the OracleAS PDK with Oracle JDeveloper so that you can drop the tags from the Oracle JDeveloper Components Palette. For more information, see the *Registering a Custom Tag Library in JDeveloper* section in the Oracle JDeveloper online help.

7.3.2.1.3 Creating a Portlet You can create your Struts portlet either manually or by using the Java Portlet wizard. Although the wizard does not explicitly offer Struts support, you can utilize the wizard to build your Struts portlet.

To create a **portlet**:

1. In Oracle JDeveloper, open the OracleAS PDK Java Portlet Wizard.

Note: For more information on opening the wizard, see [Section 6.6.2.1, "Creating a Portlet and Provider"](#).

2. For the **Implementation Style** of the show page, select **Java Class**.
3. For the **Package Name**, enter `oracle.portal.provider.v2.render.http`
4. For the **Class Name**, enter `StrutsRenderer`.
5. The Java Portlet Wizard generates the skeleton of the portlet renderer class, `StrutsRenderer`, for you. Since the `StrutsRenderer` is part of the PDK, you do not need this generated file. So, when you finish the wizard, you must delete the file generated by the wizard. To do so, click the file in the System Navigator window, then choose **File > Erase from Disk** in Oracle JDeveloper.
6. Edit the `provider.xml` and change the following properties:

At the provider level:

- If you want users to always return to the same portlet state as when they left the portal page, you can configure the struts renderer to save the struts action in the struts context:

```
<actionInSession>true</actionInSession>
```

If you prefer that users always start from the beginning of the portlet when they return from outside the portal page, then you should not save the struts action:

```
<actionInSession>false</actionInSession>
```

- If the Struts application uses sessions (for example, the form synchronizer token mechanism is used or `<actionInSession>` is set to true), enable session handling:

```
<session>true</session>
```

At the portlet level:

- Specify the first action to raise when the portlet is called. Use the following code:

```
<showPage class="oracle.portal.provider.v2.render.http.StrutsRenderer">
<defaultAction>/portal/prepareNewBlog.do</defaultAction>
</showPage>
```



For more information on the syntax of `provider.xml`, refer to the provider JavaDoc on OTN:

http://www.oracle.com/technology/products/ias/portal/html/javadoc/xml_tag_reference_v2.html

7.3.2.1.4 Extending the portlet to add Portal Business Logic In your application, you should add code specific to your portal, such as the user's information, personalization, and localization. To do so, you can create a new `Action` class that is only called in the Portal context, and handles all Portal-specific business logic.

7.3.2.2 Registering the Provider

Now that your portlet is ready to be used by OracleAS Portal, you must make it accessible to OracleAS Portal by registering it. For information on how to register your PDK-Java portlet, refer to [Section 6.6.2.5, "Registering and Viewing Your Portlet"](#). If you chose to save the struts action in the session context, `<actionInSession>true</actionInSession>`, then you must specify the provider login frequency as **Once per user session** during registration. Setting the login frequency this way ensures the session information is passed to your struts portlet.

7.3.2.3 Summary

Oracle Application Server enables you to easily create Struts portlets using Oracle JDeveloper and publish existing Struts applications to OracleAS Portal. For more information on using the Oracle JDeveloper Java Portlet wizards, refer to the beginning of this chapter. For more information on using OracleAS Portal, refer to the *Oracle Application Server Portal User's Guide* and the *OracleAS Portal Online Help*.

7.3.3 Creating an Oracle Application Development Framework (ADF) Portlet

Similarly to Struts, Oracle ADF relies on the MVC design pattern. Oracle ADF applications leveraging the Struts controller can be turned into portlets and deployed to OracleAS Portal the same way as Struts applications. Refer to [Section 7.3.2, "Creating a Struts Portlet"](#).

Creating PL/SQL Portlets

Note: In general, Oracle recommends that you build your portlets using Java rather than PL/SQL. For more information on choosing a technology for building your portlets, refer to [Chapter 2, "Portlet Technologies Matrix"](#). For more information on building your portlets using Java, refer to [Chapter 6, "Creating Java Portlets"](#).

The OracleAS Portal PL/SQL APIs are implemented as a set of PL/SQL packages and objects. Database providers and portlets are deployed to a database schema as PL/SQL packages. This chapter explains how to create PL/SQL portlets based on the Oracle Application Server Portal Developer Kit-PL/SQL (PDK-PL/SQL). To make effective use of this chapter, you should already know PL/SQL and have some familiarity with the PL/SQL Web Toolkit.

This chapter contains the following sections:

- [Guidelines for Creating PL/SQL Portlets](#)
- [Building PL/SQL Portlets with the PL/SQL Generator](#)
- [Building PL/SQL Portlets Manually](#)
- [Implementing Information Storage](#)
- [Using Parameters](#)
- [Accessing Context Information](#)
- [Implementing Portlet Security](#)
- [Improving Portlet Performance with Caching](#)
- [Implementing Error Handling](#)
- [Implementing Event Logging](#)
- [Writing Multilingual Portlets](#)
- [Enhancing Portlets for Mobile Devices](#)
- [Registering Providers Programmatically](#)



The source code for many of the examples referenced in this chapter is available as part of PDK-PL/SQL. You can download PDK-PL/SQL from the OracleAS Portal Developer Kit (PDK) page on OTN:

<http://www.oracle.com/technology/products/ias/portal/pdk.html>

When you unzip PDK-PL/SQL, you will find the examples in:

```
../pdk/plsql/starter
../pdk/plsql/sample
../pdk/plsql/cache
../pdk/plsql/sso
../pdk/plsql/svcex
```

You can find the reference for PDK-PL/SQL in:

```
../pdk/plsql/doc
```

8.1 Guidelines for Creating PL/SQL Portlets

When you write your portlets in PL/SQL, you should follow the best practices described in this section:

- [Portlet Show Modes](#)
- [Recommended Portlet Procedures and Functions](#)
- [Guidelines for Mobile Portlets](#)

8.1.1 Portlet Show Modes

Just like a Java portlet, a PL/SQL portlet has a variety of Show modes available to it. A Show mode is an area of functionality provided by a portlet. The available Show modes are described more fully in [Chapter 6, "Creating Java Portlets"](#):

- Shared Screen mode is described in [Section 6.1.1.1, "Shared Screen Mode \(View Mode for JPS\)"](#)
- Edit mode is described in [Section 6.1.1.2, "Edit Mode \(JPS and OracleAS Portal\)"](#).
- Edit Defaults mode is described in [Section 6.1.1.3, "Edit Defaults Mode \(JPS and OracleAS Portal\)"](#).
- Preview mode is describe in [Section 6.1.1.4, "Preview Mode \(JPS and OracleAS Portal\)"](#).
- Full Screen mode is described in [Section 6.1.1.5, "Full Screen Mode \(OracleAS Portal\)"](#).
- Help mode is described in [Section 6.1.1.6, "Help Mode \(JPS and OracleAS Portal\)"](#).
- About mode is described in [Section 6.1.1.7, "About Mode \(JPS and OracleAS Portal\)"](#).
- Link mode is described in [Section 6.1.1.8, "Link Mode \(OracleAS Portal\)"](#).

To check for the selected Show mode, you can use the constants in the `wwpro_api_provider` package. These constants are listed with their corresponding Show mode in [Table 8–1](#).

Table 8–1 Show Mode Constants in `wwpro_api_provider`

Show mode	Constant
Shared Screen	MODE_SHOW
Edit	MODE_SHOW_EDIT
Edit Defaults	MODE_SHOW_EDIT_DEFAULTS
Preview	MODE_SHOW_PREVIEW
Full Screen	MODE_SHOW_DETAILS

Table 8–1 (Cont.) Show Mode Constants in *wwpro_api_provider*

Show mode	Constant
Help	MODE_SHOW_HELP
About	MODE_SHOW_ABOUT
Link	MODE_SHOW_LINK

8.1.2 Recommended Portlet Procedures and Functions

The primary goal of the portlet's code is to generate the HTML output that displays on a page for all of the Show modes required by OracleAS Portal. Although it is possible to implement the portlet as a set of separate PL/SQL stored program units, organizing the portlet's code into a PL/SQL package is the best way of encapsulating related portlet code and data as a single unit in the database. You also achieve better database performance and ease of portlet maintenance.

As you may recall from [Section 2.4, "Deployment Type"](#), requests from OracleAS Portal for a particular portlet go through the portlet's provider. To communicate with its portlets, the provider contains a set of required methods that make calls to the portlet code.

When implementing a portlet as a PL/SQL package, it is a good idea to organize the portlet code in parallel with the provider code. For example, when the provider needs to retrieve information about one of its portlets, it uses its `get_portlet` function. Hence, it makes sense for the portlet to contain a `get_portlet_info` function that returns the requested information when called by the provider's `get_portlet` function. Similarly, it is logical for the provider's `show_portlet` procedure to call the portlet's `show` procedure, which produces the HTML output for a requested Show mode and returns it to the provider.

[Table 8–2](#) describes the recommended procedures and functions for a PL/SQL portlet to communicate effectively with the database provider.

Table 8–2 Recommended Functions and Procedures for PL/SQL Portlets

Procedure/Function Name	Purpose
<code>get_portlet_info</code>	Returns the portlet record to the provider.
<code>show</code>	Produces HTML output for a requested Show mode and returns it to the provider.
<code>register</code>	Initializes the portlet at the instance level. The register procedure should not contain any transaction closing statements, such as COMMIT, ROLLBACK, or SAVEPOINT. OracleAS Portal handles the closing of the transactions itself.
<code>deregister</code>	Enables cleanups at the instance level. The deregister procedure should not contain any transaction closing statements, such as COMMIT, ROLLBACK, or SAVEPOINT. OracleAS Portal handles the closing of the transactions itself.
<code>is_runnable</code>	Determines whether the portlet can be run. Security checks can be performed in this function.
<code>copy</code>	Copies the personalized and default values of portlet preferences from one portlet instance to a new portlet instance when OracleAS Portal makes a copy of the page.
<code>describe_parameters</code>	Returns a list of public portlet parameters.

8.1.3 Guidelines for Mobile Portlets

OracleAS Portal is capable of rendering its pages for both HTML and non-HTML (mobile) devices. When designing a portlet for a mobile device, you must consider some additional guidelines. The guidelines for mobile portlets are described fully in [Section 6.1.3, "Guidelines for Mobile Portlets"](#).

For information on how to build mobile-enabled portlets, refer to [Section 8.12, "Enhancing Portlets for Mobile Devices"](#).

8.2 Building PL/SQL Portlets with the PL/SQL Generator

To facilitate the development of database providers and PL/SQL portlets, you can use the PL/SQL Generator, a utility that creates installable PL/SQL code for a database provider and its portlets. The PL/SQL Generator is a standalone Web application that receives the provider and portlet definitions in the form of an XML file (similar in format to the `provider.xml` file). The XML tags used for the provider and portlet definition are a subset of the XML tags used for defining Web providers with PDK-Java. The output of the PL/SQL Generator is a SQL script that can be run from SQL*Plus. The script contains SQL commands for installing the provider and portlet packages in the correct order.

You can download the PL/SQL Generator along with its installation instructions from:

<http://www.oracle.com/technology/products/ias/portal/files/plsqlgenerator.zip>

The general model for working with the PL/SQL Generator is as follows:

1. Create an XML file that defines the provider and portlets that you want to build, as described in [Section 8.2.1, "Creating the Input XML File"](#).
2. Run the PL/SQL Generator using the XML file as input, as described in [Section 8.2.2, "Running the PL/SQL Generator"](#).
3. Publish the generated PL/SQL portlet, which includes the following steps:
 - Install the provider generated by the PL/SQL Generator into the database, as described in [Section 8.2.3.1, "Installing the Packages in the Database"](#).
 - Register the database provider with the Oracle Application Server, as described in [Section 8.2.3.2, "Registering the Database Provider"](#).
 - Add the generated portlet to a page, as described in [Section 8.2.3.3, "Adding Your Portlet to a Page"](#).

8.2.1 Creating the Input XML File

The source XML file starts and ends with the `<provider>` and `</provider>` tags, and can include one or more portlet definitions. Each portlet definition is bracketed by the `<portlet>` and `</portlet>` tags. A portlet definition includes the XML tags that specify values for the portlet record attributes and enable the links in the portlet header. For example, the `<name>` tag specifies the portlet name in the provider domain and the `<title>` tag specifies the portlet display name or title. When set to true, the `<showEdit>` tag enables the Edit mode for the portlet and the corresponding link in the portlet header. [Table 8–3](#) lists the available XML tags for PL/SQL Generator input.

Table 8–3 XML Tags for PL/SQL Generator Input

XML Tag	Definition	Value Type
provider	Encloses provider definition tags.	Not applicable
portlet	Encloses portlet definition tags.	Not applicable
id	Specifies the portlet ID in the provider. This value must be unique within the provider.	string
name	Specifies the portlet name. The name should not contain any spaces. The generator uses the information provided in the name tag for the portlet package name.	string
title	Specifies the portlet display name.	string
shortTitle	Specifies the portlet short display name. This tag is useful for mobile portlets.	string
description	Specifies the portlet description.	string
defaultLocale	Specifies the language the portlet renders by default. The value is the two letter ISO language and country codes expressed as <i>language.country</i> .	string
timeout	Specifies the portlet's timeout interval in seconds.	number
timeoutMsg	Specifies the message to display when the portlet times out.	string
showEdit	Indicates whether the portlet supports Edit mode, which enables the user to personalize the portlet's properties.	Boolean
showEditDefault	Indicates whether the portlet supports the Edit Defaults mode, which enables page administrators to personalize the default values of the portlet's properties.	Boolean
showDetails	Indicates whether the portlet can be viewed in Full Screen mode. In this mode, the entire browser window is dedicated to the portlet. Full screen mode enables the portlet to show more details than when it shares the page with other portlets.	Boolean
showPreview	Indicates whether the portlet supports the Preview mode.	Boolean
hasHelp	Indicates whether the portlet supports the Help mode.	Boolean
hasAbout	Indicates whether the portlet supports the About mode.	Boolean
language	Defines the portlet's default language (for example, en).	string
contentType	Indicates the default content type supported by the portlet. The tag can take one of the following values: wwpro_api_provider.CONTENT_TYPE_HTML wwpro_api_provider.CONTENT_TYPE_XML wwpro_api_provider.CONTENT_TYPE_MOBILE	string
apiVersion	Specifies the version of the OracleAS Portal PL/SQL API to which the portlet conforms. The value should be wwpro_api_provider.API_VERSION_1.	string

Table 8–3 (Cont.) XML Tags for PL/SQL Generator Input

XML Tag	Definition	Value Type
<code>callIsRunnable</code>	Indicates whether OracleAS Portal must check for the user's credentials before displaying the portlet. The default value is <code>true</code> .	Boolean
<code>callGetPortlet</code>	Indicates whether the portal can use the portlet record data stored in the Portlet Metadata Repository (PMR) instead of contacting the provider for the portlet record. If the portlet record (specified by <code>provider id</code> , <code>portlet id</code> , and <code>language</code>) returned by a provider does not change, then the provider should set the value for <code>call_get_portlet</code> to <code>false</code> . This tells the portal to use the PMR instead of making calls to the provider's <code>get_portlet</code> and <code>get_portlet_list</code> functions. An example of when a provider would not want the portal to use portlet metadata from the PMR is when the value of the portlet records is different for logged on users. The default value is <code>true</code> .	Boolean
<code>acceptContentType</code>	Specifies a comma-delimited list of content types that the portlet can produce. For example, if a portlet can produce content of both HTML and MOBILEXML type, then the tag value is: <code>text/html,text/vnd.oracle.mobilexml</code>	string
<code>hasShowLinkMode</code>	Indicates whether the portlet implements the Link mode. If the value is <code>false</code> , the portlet uses its short or full title to display a link label that references the portlet content in a mobile device. Otherwise, a personalized link can be generated in the portlet code. The default value is <code>false</code> .	Boolean
<code>mobileOnly</code>	Indicates whether the portlet is available only to mobile devices. The default value is <code>false</code> .	Boolean
<code>preferenceStorePath</code>	Specifies the base preference store path where the provider has stored the portlet personalization information. This path is used when exporting portlets.	string
<code>createdOn</code>	Defines the portlet creation date. The default value is <code>sysdate</code> .	date
<code>createdBy</code>	Identifies the user who created the portlet record.	string
<code>lastUpdatedOn</code>	Defines the most recent date on which the portlet record was changed. The default value is <code>sysdate</code> .	date
<code>lastUpdatedBy</code>	Identifies the user who most recently changed the portlet record.	string
<code>passAllUrlParams</code>	Indicates parameter passing behavior in the portlet. If the tag value is <code>true</code> , then OracleAS Portal passes all parameters in the URL to the portlet. If the tag value is <code>false</code> , then the portlet receives only those parameters that are intended for the portlet. The default value is <code>true</code> .	Boolean
<code>cacheLevel</code>	Indicates a portlet's cache level. It can take one of the following values: <code>wwpro_api_provider.CACHE_LEVEL_SYSTEM</code> <code>wwpro_api_provider.CACHE_LEVEL_USER</code> <code>wwpro_api_provider.CACHE_LEVEL_PTL_SESSION</code>	string

Table 8–3 (Cont.) XML Tags for PL/SQL Generator Input

XML Tag	Definition	Value Type
rewriteUrls	Indicates whether or not URL rewriting will be performed on the output from a portlet render request. The default value is false.	Boolean

Following is a sample of the input XML for the PL/SQL Generator. Mandatory information is shown in bold.

```
<!-- This is a sample provider.xml file for the PLSQL Generator 1.2 -->
<provider>
  <portlet>
    <id>1</id>
    <name>Test_Portlet</name>
    <title>Test Portlet Title</title>
    <shortTitle>Short portlet title</shortTitle>
    <description>This is a Test portlet</description>
    <timeout>30</timeout>
    <timeoutMsg>Test Portlet Timed Out</timeoutMsg>
    <showEdit>true</showEdit>
    <showEditDefault>true</showEditDefault>
    <showDetails>true</showDetails>
    <showPreview>true</showPreview>
    <hasHelp>true</hasHelp>
    <hasAbout>true</hasAbout>
    <language>en</language>
    <contentType>wwpro_api_provider.CONTENT_TYPE_HTML</contentType>
    <apiVersion>wwpro_api_provider.API_VERSION_1</apiVersion>
    <callIsRunnable>true</callIsRunnable>
    <callGetPortlet>true</callGetPortlet>
    <acceptContentType>'text/html'</acceptContentType>
    <hasShowLinkMode>false</hasShowLinkMode>
    <mobileOnly>false</mobileOnly>
    <passAllUrlParams>true</passAllUrlParams>
    <cacheLevel>wwpro_api_provider.CACHE_LEVEL_USER</cacheLevel>
    <rewriteUrls>true</rewriteUrls>
  </portlet>
</provider>
```

8.2.2 Running the PL/SQL Generator

After you have created a valid XML input file, you can run the PL/SQL Generator to generate the provider and portlet packages in the form of a SQL file:

1. If you have not already done so, install the PL/SQL Generator according to the instructions that came with the download.
2. From your browser, go to the URL for the PL/SQL Generator. It should look something like the page shown in [Figure 8–1](#).

Figure 8–1 PL/SQL Generator Page

PL/SQL Generator v1.2

This utility generates installable PL/SQL code for a database provider and its PL/SQL portlets based on the provider and portlet definitions that are stored in the Source XML file.

1. **Source XML File:** This XML file defines the database provider and its PL/SQL portlets using the XML tags that specify values for the provider and portlet record attributes. Click the Browse button and select the XML file.
2. **Provider Name:** Name of the database provider that is to be generated by PL/SQL Generator 1.2. The name should **not contain any spaces**.
3. Click the **Generate** button to generate a SQL file that contains the provider and portlet packages.

Source XML File: Browse...

Provider Name :

Generate

3. Click **Browse** and select the source XML file for the **Source XML File** field. Refer to [Section 8.2.1, "Creating the Input XML File"](#) for more information on creating the XML file.
4. In the **Provider Name** field, enter the name of the provider. The provider name must not contain any spaces. The generator uses the value entered in this field for the provider package name.
5. Click **Generate** to generate the SQL file that contains the installable PL/SQL code for the provider and portlet packages. When the browser prompts you to save or open the file, choose **Save**.
6. In the Save dialog box, change the file extension to `.sql` and revise the file name as you wish.
7. Save the file.

8.2.3 Publishing the Generated PL/SQL Portlet

After you have run the PL/SQL Generator and obtained a SQL file, you still need to perform the following tasks to make the provider and portlets available to OracleAS Portal:

- [Installing the Packages in the Database](#)
- [Registering the Database Provider](#)
- [Adding Your Portlet to a Page](#)

8.2.3.1 Installing the Packages in the Database

To install the generated provider and portlet packages into the database where you installed OracleAS Portal, perform the following steps:

1. Start a SQL*Plus session and log in to the PORTAL schema.
2. Create a new database schema, the provider schema, to store the generated provider and portlet packages by entering the following commands in SQL*Plus:

```
create user provider_schema identified by provider_schema_password;
grant resource, connect to provider_schema;
```

3. Grant the EXECUTE privilege for the OracleAS Portal APIs to the provider schema by running the `provsyns.sql` script that is located in the `MID_TIER_ORACLE_HOME/portal/admin/plsql/wwc` directory as follows:

```
@provsyns.sql provider_schema
```

4. Log in to the provider schema and run the generated SQL file. It will create the provider and portlet packages in the database.

8.2.3.2 Registering the Database Provider

After creating the provider and portlet packages in the database, you must register the provider with OracleAS Portal before adding the PL/SQL portlet to a portal page:

1. Log in to OracleAS Portal as an administrator.
2. From the Portal Builder, click the **Administer** tab then the **Portlets** tab.
3. In the **Remote Providers** portlet, click **Register a Provider**.
4. Fill in the **Name**, **Display Name**, **Timeout**, and **Timeout Message** as desired.
5. From the **Implementation Style**, list choose **Database**.
6. Click **Next** and complete the remainder of the wizard.
7. When you complete the wizard, click **Finish**.
8. From the Portlet Repository portlet, click **Display Portlet Repository**.
9. Browse the repository and find the provider that you just registered. Typically, new providers appear in the Portlet Staging Area of the repository.
10. Once you find the provider, confirm that it contains all of the portlets you created in the provider. If the provider or its portlets do not appear, then retrace the steps in this section and the preceding sections ([Section 8.2.3.1, "Installing the Packages in the Database"](#), [Section 8.2.1, "Creating the Input XML File"](#), and [Section 8.2.2, "Running the PL/SQL Generator"](#)) to ensure that you correctly created and registered your provider and portlet.

8.2.3.3 Adding Your Portlet to a Page

Once your provider and its portlets appear in the repository, you can add it to a page. To add your portlet to a page, follow the instructions in the *Oracle Application Server Portal User's Guide*.

8.3 Building PL/SQL Portlets Manually

This section describes how to build a basic PL/SQL portlet using the `hello world` sample contained in the `starter` provider sample. The `starter` provider sample, located in `.. \pdkplsql \pdk \plsql \starter` in PDK-PL/SQL (`pdkplsql.zip`), consists of the following files:

- `starter_provider.pks` is the package specification of the `starter` provider.
- `starter_provider.pkb` is the package body of the `starter` provider.
- `helloworld_portlet.pks` is the package specification of the `hello world` portlet.
- `helloworld_portlet.pkb` is the package body of the `hello world` portlet.

- `snoop_portlet.pks` is the package specification of the `snoop` portlet.
- `snoop_portlet.pkb` is the package body of the `snoop` portlet.
- `insintpr.sql` is the installation script for the `starter` provider.

The general model for building PL/SQL portlets manually is as follows:

1. Modify the `hello_world` portlet package specification and body to create your own portlet package, as described in [Section 8.3.1, "Implementing the Portlet Package"](#).
2. Modify the `starter` provider package specification and body to add your new portlet to a provider, as described in [Section 8.3.2, "Implementing the Provider Package"](#).
3. Add your portlet to a page, as described in [Section 8.3.3, "Adding Your Portlet to a Page"](#).

8.3.1 Implementing the Portlet Package

To modify `helloworld_portlet.pks` and `helloworld_portlet.pkb` to create your own portlet package, perform the following steps:

1. Make copies of the package specification, `helloworld_portlet.pks`, and body, `helloworld_portlet.pkb`.
2. Rename the copies to `my_first_portlet.pks` and `my_first_portlet.pkb`, respectively.
3. Open `my_first_portlet.pks` in an editor and change the name of the package to `my_first_portlet`:

```
CREATE OR REPLACE
package my_first_portlet
is
...

end my_first_portlet;
```

4. Open `my_first_portlet.pkb` in an editor and repeat the change that you made in the previous step; that is, change the name of the package to `my_first_portlet`.
5. In `my_first_portlet.pkb`, find the function named `get_portlet_info` and modify it as follows:

```
function get_portlet_info
(
    p_provider_id in integer
    ,p_language in varchar2
)
return wwpro_api_provider.portlet_record
is
    l_portlet wwpro_api_provider.portlet_record;
begin
    l_portlet.id := starter_provider.PORTLET_FIRST;
    l_portlet.provider_id := p_provider_id;
    l_portlet.title := 'My First Portlet';
    l_portlet.name := 'My First Portlet';
    ...
```

6. In `my_first_portlet.pkb`, find the procedure named `show` and modify it as follows:

```

procedure show
(
  p_portlet_record          wwpro_api_provider.portlet_runtime_record
)
is
  l_portlet                wwpro_api_provider.portlet_record;
  l_text_name in varchar2(100);
  l_text in varchar2(200);
begin
  ...
  /*
  Display the content of the portlet in the show mode.
  Use the wwui_api_portlet.portlet_text() API when
  generating the content of the portlet so that the
  output uses the portlet CSS.
  */
  http.p(wwui_api_portlet.portlet_text(
    p_string => 'Hello World - Mode Show'
    ,p_level => 1
  ));
  /*
  Add the functionality you want here. In this case we are adding
  a welcome message addressed to the current user.
  */
  l_text_name := 'Welcome to my first portlet ' || wwctx_api.get_user;
  l_text := wwui_api_portlet.portlet_text(
    p_string => l_text_name,
    p_level => 1
  );
  http.p(l_text);      http.para;
  if (p_portlet_record.has_border) then
    wwui_api_portlet.close_portlet;
  end if;
  ...

```

7. Save `my_first_portlet.pkb`.

8.3.2 Implementing the Provider Package

After you implement the portlet package, you must add your portlet to a provider. To modify `starter_provider.pks` and `starter_provider.pkb` to add your new portlet to a provider, perform the following steps:

1. Make copies of the package specification, `starter_provider.pks`, and body, `starter_provider.pkb`.
2. Rename the copies to `starter_provider2.pks` and `starter_provider2.pkb`, respectively.

Note: If you want to create a new, empty provider, remove all references to the `hello world` and `snoop` portlets from `starter_provider2.pks` and `starter_provider2.pkb` before performing the steps that follow.

3. Open `starter_provider2.pks` in an editor.

4. Add a constant called `PORTLET_FIRST`. This constant is used as the identifier for the portlet within the provider. Hence, the constant's value must be unique within the provider.

```
CREATE OR REPLACE
package STARTER_PROVIDER
is
  /**
   * This package is used as an example to show how providers can be created
   * in the portal system.
   *
   * This provider contains the following portlets:
   *
   * Hello World (PORTLET_HELLOWORLD)
   * Snoop (PORTLET_SNOOP)
   *
   */
  PORTLET_HELLOWORLD constant integer := 1;
  PORTLET_SNOOP      constant integer := 2;
  PORTLET_FIRST      constant integer := 3;
```

5. Save `starter_provider2.pks`.
6. Open `starter_provider2.pkb` in an editor.
7. In `starter_provider2.pkb`, add a call for the new portlet's `get_portlet_info` function in the `get_portlet` function of the provider package. This step entails adding the call `my_first_portlet.get_portlet_info` in the `get_portlet` function. The `get_portlet` function allows the portal to retrieve information for the portlet when necessary.

```
function get_portlet
  p_provider_id in integer
  ,p_portlet_id in integer
  ,p_language in varchar2
)
return wwpro_api_provider.portlet_record
is
begin
  if (p_portlet_id = PORTLET_HELLOWORLD) then
    return helloworld_portlet.get_portlet_info(
      p_provider_id => p_provider_id
      ,p_language   => p_language
    );
  elsif (p_portlet_id = PORTLET_SNOOP) then
    return snoop_portlet.get_portlet_info(
      p_provider_id => p_provider_id
      ,p_language   => p_language
    );
  elsif (p_portlet_id = PORTLET_FIRST) then
    return my_first_portlet.get_portlet_info(
      p_provider_id => p_provider_id
      ,p_language   => p_language
    );
  else
    raise wwpro_api_provider.PORTLET_NOT_FOUND_EXCEPTION;
  end if;
end get_portlet;
```

8. In `starter_provider2.pkb`, add the new portlet to the list of portlets returned by the provider. This step entails adding the new portlet to the `get_portlet_`

list function of the provider. The `get_portlet_list` function tells the portal which portlets the provider implements.

```

function get_portlet_list
...
begin
  l_cnt := 0;
  if (p_security_level = false ) then
    l_cnt := l_cnt + 1;
    l_portlet_list(l_cnt) := get_portlet(
      p_provider_id => p_provider_id
    ,p_portlet_id   => PORTLET_HELLOWORLD
    ,p_language    => p_language
    );
    l_cnt := l_cnt + 1;
    l_portlet_list(l_cnt) := get_portlet(
      p_provider_id => p_provider_id
    ,p_portlet_id   => PORTLET_SNOOP
    ,p_language    => p_language
    );
    l_cnt := l_cnt + 1;
    l_portlet_list(l_cnt) := get_portlet(
      p_provider_id => p_provider_id
    ,p_portlet_id   => PORTLET_FIRST
    ,p_language    => p_language
    );
  else
    if (helloworld_portlet.is_runnable(
      p_provider_id => p_provider_id
    ,p_reference_path => null)
    ) then
      l_cnt := l_cnt + 1;
      l_portlet_list(l_cnt) := get_portlet(
        p_provider_id => p_provider_id
      ,p_portlet_id   => PORTLET_HELLOWORLD
      ,p_language    => p_language
      );
    end if;
    if (snoop_portlet.is_runnable
      p_provider_id => p_provider_id
    ,p_reference_path => null)
    ) then
      l_cnt := l_cnt + 1;
      l_portlet_list(l_cnt) := get_portlet(
        p_provider_id => p_provider_id
      ,p_portlet_id   => PORTLET_SNOOP
      ,p_language    => p_language
      );
    end if;
    if (my_first_portlet.is_runnable(
      p_provider_id => p_provider_id
    ,p_reference_path => null)
    ) then
      l_cnt := l_cnt + 1;
      l_portlet_list(l_cnt) := get_portlet(
        p_provider_id => p_provider_id
      ,p_portlet_id   => PORTLET_FIRST
      ,p_language    => p_language
      );
    end if;
  end if;
end if;

```

```

        return l_portlet_list;
    end get_portlet_list;

```

9. In `starter_provider2.pkb`, modify the `is_portlet_runnable` function to add a call to the `is_runnable` function of the new portlet.

```

function is_portlet_runnable
(
    p_portlet_instance in wwpro_api_provider.portlet_instance_record
)
return boolean
is
begin
    if (p_portlet_instance.portlet_id = PORTLET_HELLOWORLD) then
        return helloworld_portlet.is_runnable(
            p_provider_id => p_portlet_instance.provider_id
            ,p_reference_path => p_portlet_instance.reference_path
        );
    elsif (p_portlet_instance.portlet_id = PORTLET_SNOOP) then
        return snoop_portlet.is_runnable(
            p_provider_id => p_portlet_instance.provider_id
            ,p_reference_path => p_portlet_instance.reference_path
        );
    elsif (p_portlet_instance.portlet_id = PORTLET_FIRST) then
        return my_first_portlet.is_runnable(
            p_provider_id => p_portlet_instance.provider_id
            ,p_reference_path => p_portlet_instance.reference_path
        );
    else
        raise wwpro_api_provider.PORTLET_NOT_FOUND_EXCEPTION;
    end if;
end is_portlet_runnable;

```

10. Repeat step 9 according to the information in [Table 8-4](#).

Table 8-4 Changes to `starter_provider2.pkb`

Procedure/Function	Addition
procedure register_portlet	<pre> elsif (p_portlet_instance.portlet_id = PORTLET_FIRST) then my_first_portlet.register(p_portlet_instance) </pre>
procedure deregister_portlet	<pre> elsif (p_portlet_instance.portlet_id = PORTLET_FIRST) then my_first_portlet.deregister (p_portlet_instance) </pre>
function describe_portlet_parameters	<pre> elsif (p_portlet_id = PORTLET_FIRST) then return my_first_portlet.describe_parameters (p_provider_id, p_language); </pre>
procedure show_portlet	<pre> elsif (p_portlet_record.portlet_id = PORTLET_FIRST) then my_first_portlet.show(p_portlet_record) </pre>
procedure copy_portlet	<pre> elsif (p_copy_portlet_info.portlet_id = PORTLET_FIRST) then my_first_portlet.copy(p_portlet_record) </pre>

11. Save and close `starter_provider2.pkb`.

12. Log in to OracleAS Portal as you normally would.
13. From the Portal Builder, click the **Administer** tab then the **Portlets** tab.
14. From the Portlet Repository portlet, click **Display Portlet Repository**.
15. Browse the repository and find the starter provider (typically it will appear in the Portlet Staging Area of the repository). It should contain its two original portlets: `hello world` and `snoop`.
16. From a command line prompt, start SQL*Plus and connect as the owner of the starter provider schema.
17. Compile the new and modified PL/SQL packages in the following order:
 - `starter_provider2.pks`
 - `my_first_portlet.pks`
 - `starter_provider2.pkb`
 - `my_first_portlet.pkb`
18. If any compilation errors occur, fix and recompile them until all of the packages compile successfully.
19. From the Portlet Repository portlet, click **Display Portlet Repository**.
20. Browse the repository and find the starter provider again. It should now contain your new portlet, `my_first_portlet`, in addition to its original portlets.

Note: If you make changes to an existing provider or the portlet record, you need to refresh your provider before seeing the changes reflected in your OracleAS Portal instance.

8.3.3 Adding Your Portlet to a Page

Your portlet should now be available for adding to pages like any other portlet in the Portlet Repository. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.4 Implementing Information Storage

OracleAS Portal provides APIs for storing and retrieving individual portlet preferences, and storing and manipulating temporary data for the current session:

- [Implementing a Preference Store](#)
- [Implementing a Session Store](#)

8.4.1 Implementing a Preference Store

OracleAS Portal provides a set of APIs for storing and retrieving individual preferences for each unique portlet instance in a persistent manner. It provides a unique identifier for each individual, a preference store automatically mapped by user, and access mechanisms for storing and retrieving personalization information in your PL/SQL portlets.

By default, when you enable end-user personalization, **Personalize** appears on the title bar of your portlet. This link displays a form where users can choose settings for that portlet.

End-user personalization options are available through the `wwpre_api_name` and `wwpre_api_value` packages.

8.4.1.1 Using a Preference Store

In general, you can set up preference storage as follows:

1. Create the preference path via `wwpre_api_name.create_path`.
2. Create the preference with `wwpre_api_name.create_name`.
3. Set the preference values by providing the preference name and scoping level for which you want to set the value. Use `wwpre_api_value.set_value_as_varchar2`, `set_value_as_number`, or `set_value_as_date` for this purpose.
4. Get preference values by providing the preference name and path whenever you want to retrieve the preference value. Use `wwpre_api_value.get_value_as_varchar2`, `get_value_as_number`, or `get_value_as_date` for this purpose.

8.4.1.2 Creating and Accessing a Preference Store

The services example, located in `.. \pdkplsql \pdk \plsql \svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement preference storage. The objective is to achieve the following functionality:

- When a user clicks **Personalize**, they can enter text in two fields.
- The first field prompts for personalized text. The second prompts for a personalized portlet title.
- The values the user enters for these two fields are stored in the preference store.
- The personalized text and portlet titles are retrieved whenever that user invokes the portlet instance.

You can browse through this example as follows to see how to create the preference store, store values in it, and retrieve values from it:

1. Open the `services_portlet.pkb` file in an editor.

The portlet path and preference names are provided with aliases in the constants part of your portlet definition.

```
DOMAIN          constant varchar2(30) := 'provider';
SUBDOMAIN       constant varchar2(32) := 'services';
PORTLET_PATH    constant varchar2(256) := 'oracle.portal.pdk.servicesportlet';
PREFNAME_STRING constant varchar2(30) := 'services_string';
PREFNAME_TITLE  constant varchar2(30) := 'services_title';
```

2. Find the `register` procedure. Your portlet needs to create a path for storing preferences. To do so, it calls `wwpre_api_name.create_path` for creating the preference path. It then calls `wwpre_api_name.create_name` for creating the preference name, taking the portlet path, name, and description as input parameters. Another input parameter is the `p_type_name` that indicates special value types. The `NLSID` type indicates that the value stored is an NLS id. The functions for setting and retrieving this type treat it as a number value. Apart from that, when a preference store value of this type is exported or copied, so are its associated strings. The last input parameter, the language, is obtained from a context API.

```
procedure register
(
    p_portlet_instance in wwpro_api_provider.portlet_instance_record
```

```

)
is
begin
  --
  -- Create a path for the portlet instance. This is used to create
  -- the preferences for the portlet instance in the preference store.
  --
  wwpre_api_name.create_path(
    p_path => PORTLET_PATH || p_portlet_instance.reference_path
  );
  --
  -- Create the names to store the portlet preferences.
  --
  wwpre_api_name.create_name(
    p_path      => PORTLET_PATH
    || p_portlet_instance.reference_path,
    p_name      => PREFNAME_STRING,
    p_description => 'Single custom row in '
    || 'Introductory Example portlet.',
    p_type_name => 'NLSID',
    p_language  => wwctx_api.get_nls_language);
  wwpre_api_name.create_name(
    p_path      => PORTLET_PATH
    || p_portlet_instance.reference_path,
    p_name      => PREFNAME_TITLE,
    p_description => 'Single custom row in '
    || 'Introductory Example portlet.',
    p_type_name => 'NLSID',
    p_language  => wwctx_api.get_nls_language);
exception
  when others then
    raise;
end register;

```

3. The deregister procedure must eliminate the preference store with a call to `wwpre_api_name.delete_name`.

```

procedure deregister
(
  p_portlet_instance in wwpro_api_provider.portlet_instance_record
)
is
begin
  --
  -- Delete the path used by the portlet instance. This will delete
  -- all the names and all the values associated with the path.
  --
  wwpre_api_name.delete_path(
    p_path => PORTLET_PATH || p_portlet_instance.reference_path
  );
exception
  when others then
    raise;
end deregister;

```

4. The portlet must also get and set the values in the preference store using `wwpre_api_value.set_value` and `wwpre_api_value.get_value`. Find the `get_default_preference` function. Notice how this function loads the system level default values from the preference store. The default preferences are associated with an instance. The language strings are set in the database.

```

function get_default_preference
...
begin
  --
  -- Try to find a previously entered portlet instance string preference,
  -- if any.
  -- A portlet instance string preference is stored in the preference
  -- store and has a level of SYSTEM_LEVEL_TYPE.
  --
  p_path      => PORTLET_PATH || p_reference_path,
l_prefs.string_id := to_char(wwpre_api_value.get_value_as_number(
  p_name      => PREFNAME_STRING,
  p_level_type => wwpre_api_value.SYSTEM_LEVEL_TYPE
  ));
  --
  -- If the value returned above is null it is an indication that there
  -- is no default string yet. Initialize the string id to 0 to indicate
  -- this and load the default string value.
  --
  if (l_prefs.string_id is null or to_number(l_prefs.string_id) = 0) then
    wwpre_api_value.set_value_as_number(
      p_path      => PORTLET_PATH || p_reference_path,
      p_name      => PREFNAME_STRING,
      p_level_type => wwpre_api_value.SYSTEM_LEVEL_TYPE,
      p_level_name => null,
      p_value     => 0
    );
  ...
end get_default_preference;

```

5. Find the show procedure. Notice the behavior when the portlet is in Edit Defaults or Edit mode. Note also how `p_action` is populated when the user clicks **APPLY**, **CANCEL**, or **OK**. Once the form is submitted, the show procedure of the portlet is called again and, if the `p_action` parameter is not null, then the `save_prefs` procedure is called to save the personalizations and redirect to the relevant page.

```

procedure show
(
  p_portlet_record      wwpro_api_provider.portlet_runtime_record
)
is
  l_str varchar2(32000);
  l_pref_record preference_record;
  l_action varchar2(10);
  l_names owa.vc_arr;
  l_values owa.vc_arr;
begin
  ...
  elsif (p_portlet_record.exec_mode =
         wwpro_api_provider.MODE_SHOW_EDIT)
    or (p_portlet_record.exec_mode =
        wwpro_api_provider.MODE_SHOW_EDIT_DEFAULTS)
  then
    wwpro_api_parameters.retrieve(l_names, l_values);
    for i in 1..l_names.count loop
      if (upper(l_names(i)) = upper('p_string')) then
        l_pref_record.string := l_values(i);
      elsif l_names(i) = 'p_title' then
        l_pref_record.title_string := l_values(i);
      elsif l_names(i) = 'p_action' then

```

```

        l_action := l_values(i);
    end if;
end loop;
if (l_action in (ACTION_OK,ACTION_APPLY,ACTION_CANCEL)) then
    if (p_portlet_record.exec_mode =
        wwpro_api_provider.MODE_SHOW_EDIT) then
        save_prefs(p_string => l_pref_record.string,
            p_title => l_pref_record.title_string,
            p_action => l_action,
            p_level => wwpre_api_value.USER_LEVEL_TYPE,
            p_portlet_record => p_portlet_record);
    else
        save_prefs(p_string => l_pref_record.string,
            p_title => l_pref_record.title_string,
            p_action => l_action,
            p_level => wwpre_api_value.SYSTEM_LEVEL_TYPE,
            p_portlet_record => p_portlet_record);
    end if;
else
    show_edit(p_portlet_record => p_portlet_record);
end if;
...
end show;

```

6. The `show_edit` procedure renders the page for Edit or Edit Defaults mode. It renders two text fields that allow the user to change the personalizable values in a form with three buttons (**Apply**, **OK**, and **Cancel**). Note that this function uses the `wwpro_api_adapter.open_form` to create the HTML form with the correct action attribute for the `<FORM>` tag and with the correct hidden fields. It is important to use this procedure to create the `<FORM>` tag if you want to use the portlet with the Federated Portal Adapter from remote OracleAS Portal instances.

```

procedure show_edit
(
    p_portlet_record in wwpro_api_provider.portlet_runtime_record
)
is
    l_prefs preference_record;
    l_text_prompt_string varchar2(30);
    l_title_prompt_string varchar2(30);
begin
    ...
    http.centeropen;
    http.tableOpen(cattributes => 'BORDER="1" WIDTH=90%');
    http.tableRowOpen;
    http.p('<TD>');
    --
    -- This procedure call creates the <FORM> tags with a set of
    -- standard parameters. Using this procedure makes the
    -- personalization page work through the pl/sql http adapter.
    --
    wwpro_api_adapter.open_form(p_formattr => 'NAME="services"',
        p_prr => p_portlet_record);
    http.p('</TD>');
    http.tableRowClose;
    http.tableClose;
    http.centerclose;
    http.formclose;
end show_edit;

```

7. Review the following procedures and functions, which are related to the preference storage implementation in this example:
 - `get_user_preference` retrieves the user personalized string and title for the portlet.
 - `save_prefs` is invoked to save the preferences to the preference store when the user clicks **OK** or **Apply** after making personalization changes.
 - `entered_text_is_valid` checks to see if the text entered in the personalizable text fields is valid.
8. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
9. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.4.2 Implementing a Session Store

The services example, located in `.. \pdkplsql\pdk\plsql\svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement a session store. The objective is to achieve the following functionality:

- When a user invokes this portlet, it displays text that reads: "This portlet has rendered *x* times in this session." *x* is the number of times the portlet has been rendered.
- Every time the user invokes the portlet, the counter increases by 1.
- Clicking **Details** in the portlet enables the user to reset the counter via **Clear**. After clearing the counter, the counter starts again from zero.

8.4.2.1 Creating and Accessing a Session Store

You can browse through this example as follows to see how to create the session store, store values in it, and retrieve values from it:

1. Open the `services_portlet.pkb` file in an editor.

The domain and subdomain definitions for your session object are provided with aliases in the constants part of your portlet definition.

```
DOMAIN          constant varchar2(30) := 'provider';
SUBDOMAIN       constant varchar2(32) := 'services';
PORTLET_PATH    constant varchar2(256) := 'oracle.portal.pdk.servicesportlet';
PREFNAME_STRING constant varchar2(30) := 'services_string';
PREFNAME_TITLE  constant varchar2(30) := 'services_title';
```

2. Find the `clear_count` procedure. `clear_count` is called from the `show` procedure when the user clicks **Clear** to reset the counter. `clear_count` calls `wwsto_api_session.load_session` to load the session object. Then, it calls `wwsto_api_session.set_attribute` to set the counter to zero. Lastly, it saves the session object by calling `save_session`.

```
procedure clear_count
(
  p_action          in varchar2,
  p_back_url        in varchar2,
  p_reference_path  in varchar2
)
```

```

is
    ex_counter integer;
    session_parms &&1..wwsto_api_session;
begin
    --
    -- Clear the display counter.
    --
    if (p_action = ACTION_CLEAR) then
        --
        -- Load the session object that contains the display counter
        --
        session_parms :=
            &&1..wwsto_api_session.load_session (DOMAIN,SUBDOMAIN);
        ex_counter :=
            session_parms.get_attribute_as_number(
                'ex_counter' || p_reference_path);
        --
        -- Reset the display counter.
        --
        ex_counter := 0;
        session_parms.set_attribute(
            'ex_counter' || p_reference_path, ex_counter);
        --
        -- Save the changes to the database immediately to avoid any
        -- data consistency problems with the data stored in the
        -- session object.
        --
        session_parms.save_session;
    end if;
    owa_util.redirect_url(curl=>p_back_url);
end clear_count;

```

3. Find the `show_contents` procedure. `show_contents` is called from the `show` procedure to retrieve the counter, increment it by one, and save the value in the session store. Notice how it retrieves the session object to display the number of times the user has rendered the portlet. It also retrieves the counter value with `get_attribute_as_number` and increments the counter for every invocation of this procedure.

```

procedure show_contents
(
    p_portlet_record wwpro_api_provider.portlet_runtime_record
)
is
    l_prefs preference_record;
    session_parms &&1..wwsto_api_session;
    ex_counter integer;
    l_portlet wwpro_api_provider.portlet_record;
    l_str varchar2(32000);
begin
    --
    -- In this mode a session counter is used to indicate
    -- the number of invocations of this portlet during the
    -- current session. The counter is stored in the session
    -- store.
    --
    session_parms :=
        &&1..wwsto_api_session.load_session(DOMAIN,SUBDOMAIN);
    ex_counter :=
        session_parms.get_attribute_as_number(

```

```

        'ex_counter' || p_portlet_record.reference_path);
if (ex_counter is null) then -- first invocation
    session_params.set_attribute(
        'ex_counter' || p_portlet_record.reference_path,1);
    ex_counter := session_params.get_attribute_as_number(
        'ex_counter' || p_portlet_record.reference_path);
else -- on every invocation increase by 1
    ex_counter := ex_counter + 1;
    session_params.set_attribute(
        'ex_counter'
        || p_portlet_record.reference_path, ex_counter);
end if;
session_params.save_session;
...
end show_contents;

```

4. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
5. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.5 Using Parameters

The functionality of portlets can be extended with the help of parameters. The business logic implemented by portlets may produce different HTML output depending on the parameters passed to the page. By using portlet parameters, you can navigate within the portlet in Shared Screen mode without changing the current page. Portlets can also communicate with each other through parameters.

Portlet parameters are structured as name-value pairs. These pairs map directly to the URL parameter passing format by using the GET submission method or can use the HTTP message body by using the POST submission method. Portlets can also expose their parameters to OracleAS Portal. When added to a page, these portlets can accept values in the form of page parameters created by the page designer.

Note: Portlet parameter names should not start with an underscore (_) because those parameters are reserved for internal use by OracleAS Portal and are not passed to the portlet.

Portlets do not have direct access to the URL, the HTTP message body, or the page parameters. To retrieve the parameter values, portlets must call the OracleAS Portal PL/SQL parameter APIs provided in the `wwpro_api_parameters` package.

OracleAS Portal offers the following types of parameters:

Caution: You cannot mix the usage of public and private parameters in a portlet. To enable public parameters for your portlet, you must take steps that preclude the usage of private parameters and vice versa.

- **Private portlet parameters** enable the implementation of internal navigation in your portlet.

- **Public portlet parameters** let you pass control over the data flow of your portlet to the page designer. The page designer can map the public portlet parameters to their page parameters, provide default values, and allow users to personalize those values.
- **Page parameters** are defined in a simple user interface by page designers. These page parameters can be mapped to public portlet parameters in order for the page designer to pass parameter values from the page to the portlets on it.

For more information about parameters, refer to [Section 2.12, "Public Portlet Parameters Support"](#) and [Section 2.13, "Private Portlet Parameter Support"](#).

8.5.1 Passing Private Parameters

You can use either GET or POST HTML submission methods when passing private portlet parameters. The GET method uses the URL to pass the parameters, whereas the POST method places the parameters in an HTTP message body. For both methods, you must specify the portlet instance on the portal page, how the parameter is called, and the value of the parameter.

There are two types of private portlet parameters:

- **Qualified parameters** ensure that a private portlet parameter is not read by any other portlet on the page. The reference path, which is assigned when the portlet is added to a page, is the unique prefix of the parameter. For example, `http://page_url?277_MAP_368673.region=Europe`. The qualified parameter's reference path is `277_MAP_368673`, the name is `region`, and the value is `Europe`. For private parameters, we strongly recommend that you always use qualified parameters.
- **Unqualified parameters** have no information about the portlet instance and can be read by any portlet on the page. For example, `http://page_url?region=Europe`. The unqualified parameter's name is `region` and its value is `Europe`. For private parameters, we strongly recommend that you avoid unqualified parameters.

8.5.2 Passing Page Parameters and Mapping Public Portlet Parameters

Public portlet parameters enhance the flexibility of your portlets by enabling page designers to reuse your portlets on multiple pages. As a result, page designers do not have to ask you to make changes to the portlet code when adding the portlet to different pages. By using public portlet parameters, any portlet on a page can easily receive its value from the mapped page parameter, regardless of the portlet parameter name.

For example, suppose you have a page parameter named `dept_id`. Three portlets need this value, but one portlet calls it `dept`, another calls it `deptno`, and still another `department_id`. Mapping the page parameter enables all three portlets to receive the value from the `dept_id` parameter and place it in the appropriate portlet parameter. Furthermore, the page designer may set a default value (for example, department 20) that can be personalized by users (for example, department 30) and applied to all three portlets.

The general model for passing public and page parameters is as follows:

1. Enable public parameters in the portlet record by setting `pass_all_url_params` to `false`. This ensures that the portlet is only passed parameters intended for that portlet.

2. Declare the public parameters in the provider's `describe_portlet_parameters` function. For each of the portlets that belong to the provider, this procedure should return a list of the parameters that the portlet accepts in the form of a PL/SQL table of records of the type:

```
type portlet_parameter_table is table of
portlet_parameter_record index by binary_integer;
```

3. Provide descriptive information for the parameters in the portlet's `describe_parameters` function. For example:

```
function describe_parameters
(p_provider_id in integer, p_language in varchar2)
return wwpro_api_provider.portlet_parameter_table
is
l_params wwpro_api_provider.portlet_parameter_table;
begin
  l_params(1).name := 'dept_id';
  l_params(1).datatype := wwpro_api_provider.STRING_TYPE;
  l_params(1).description := 'Defines a department ID';
  l_params(1).display_name := 'Department ID';
  return l_params;
end describe_parameters;
```

4. Assign values to the public parameters. Public parameters typically get their values through page parameters. Page parameters are usually assigned default values by the page designer and the user can then personalize the value at runtime. Alternatively, page parameter values can be assigned in the calling URL. For more information about how page designers can use page parameters, refer to the *Oracle Application Server Portal User's Guide*.

8.5.3 Retrieving Parameter Values

Regardless of whether you are using private or public parameters, you use the same APIs to retrieve their values. Portlets obtain their parameters by calling the PL/SQL parameter APIs in the `wwpro_api_parameters` package:

- `wwpro_api_parameters.get_value` returns the parameter value that is specified by a given parameter name. Parameter names are not case sensitive, whereas parameter values are case sensitive. For example:

```
l_region := wwpro_api_parameters.get_value
(p_name => 'region',
 p_reference_path => p_portlet_record.reference_path);
```

- `wwpro_api_parameters.get_values` returns an array of parameter values. This function returns all the values that are associated with a single parameter name or an empty list if no matches are found. Some business logic may require multiple selections, when multiple values are passed to the portlet by using the same parameter name. Portlets can take one or more values of the same parameter. For example:

```
l_region_values owa.vc_arr;
...
l_region_values := wwpro_api_parameters.get_values
(p_name = 'region',
 p_reference_path => p_portlet_record.reference_path);
```

- `wwpro_api_parameters.get_names` returns the names of the parameters that are passed on to a specified portlet that is identified by the reference path. The returned list is a PL/SQL table of the `owa.vc_arr` type that is defined as follows:

```
type vc_arr is table of varchar2(32000) index by binary_integer;
```

Note: Portlet parameter names should not start with an underscore (`_`) because those parameters are reserved for internal use by OracleAS Portal and are not passed to the portlet.

For example:

```
l_names owa.vc_arr;
...
l_names := wwpro_api_parameters.get_names
(p_reference_path => p_portlet_record.reference_path);
```

- `wwpro_api_parameters.retrieve` returns the names and values of all of the portlet's parameters. For example:

```
procedure show_portlet
( p_portlet_record in out
  wwpro_api_provider.portlet_runtime_record )
is
  l_names owa.vc_arr;
  l_values owa.vc_arr;
  ...
begin
  ...
  wwpro_api_parameters.retrieve (l_names, l_values);
  for i in 1..l_names.count loop
    http.p('Parameter Name: '||l_names(i));
    http.p('Parameter Value: '||l_values(i));
    http.br;
  end loop;
  ...
end show_portlet;
```

8.6 Accessing Context Information

Whenever a user accesses a page in OracleAS Portal, a public session is established. When the user logs in to OracleAS Portal, the public session becomes an authenticated session. This session contains several pieces of context information about the user, such as user name, current session ID, IP address, and language preference. It also includes supporting information such as the OracleAS Portal schema currently in use.

Session context services return information about a user's session and are available through the `wwctx_api` package.

8.6.1 Using Context Information

The general model for working with the session context is as follows:

1. Identify the piece of information you require for your functionality.
2. Use the appropriate method from `wwctx_api` to get and optionally set this value.

Table 8-5 lists the function calls used to obtain the various pieces of session information.

Note: For more information on the context APIs, see the PL/SQL API Reference. The API Reference can be found on Portal Center (<http://portalcenter.oracle.com>) or, if you downloaded PDK-PL/SQL (pdkplsqli.zip), in ..\pdkplsqli\pdk\plsqli\doc.

Table 8–5 Context Information Function Calls

Session Information	Function Call
Current user	wwctx_api.get_user
Login status of user	wwctx_api.is_logged_on
Login time	wwctx_api.get_login_time
Language	wwctx_api.get_nls_language
Current session id	wwctx_api.get_sessionid
IP address of user client	wwctx_api.get_ip_address
User schema	wwctx_api.get_db_user
OracleAS Portal schema	wwctx_api.get_product_schema
OracleAS Portal version	wwctx_api.get_product_version

8.6.2 Using wwctx_api to Obtain Context Information

The services example, located in ..\pdkplsqli\pdk\plsqli\svcx in PDK-PL/SQL (pdkplsqli.zip), illustrates how you can obtain session information using the wwctx_api package. You can browse through this example as follows to see how the function calls are implemented in a portlet:

1. Open the services_portlet.pkb file in an editor.
2. Find the get_portlet_info function.
3. Notice the usage of wwctx_api.get_user to derive the user information and set that value in the portlet information record:

```

...
l_portlet.timeout           := null;
l_portlet.timeout_msg      := null;
l_portlet.created_on       := to_date('10/19/2000', 'MM/DD/YYYY');
l_portlet.created_by      := wwctx_api.get_user;
l_portlet.last_updated_on  := to_date('10/19/2000', 'MM/DD/YYYY');
l_portlet.last_updated_by := wwctx_api.get_user;
l_portlet.has_show_edit_defaults := true;
l_portlet.has_show_preview := true;
l_portlet.preference_store_path := PORTLET_PATH;
...

```

4. wwctx_api.get_user is used similarly in various places throughout services_portlet.pkb. Search the code for other occurrences of wwctx_api.get_user.
5. Another example of getting context information occurs in the is_runnable function:

```

function is_runnable
(
    p_provider_id in integer
    ,p_reference_path in varchar2

```

```

)
return boolean
is
begin
  --
  -- Portlet security check. It allows the portlet to be visible
  -- if the user is logged on, i.e. the current session is not a
  -- public session.
  --
  return wwctx_api.is_logged_on;
end is_runnable;

```

6. In the register procedure, `wwctx_api.get_nls_language` is used to get the language:

```

--
-- Create the names to store the portlet preferences.
--
wwpre_api_name.create_name(
  p_path      => PORTLET_PATH
  || p_portlet_instance.reference_path,
  p_name      => PREFNAME_STRING,
  p_description => 'Single custom row in '
  || 'Introductory Example portlet.',
  p_type_name => 'NLSID',
  p_language  => wwctx_api.get_nls_language);
wwpre_api_name.create_name(
  p_path      => PORTLET_PATH
  || p_portlet_instance.reference_path,
  p_name      => PREFNAME_TITLE,
  p_description => 'Single custom row in '
  || 'Introductory Example portlet.',
  p_type_name => 'NLSID',
  p_language  => wwctx_api.get_nls_language);

```

7. Close `services_portlet.pkb`. You can implement session context similarly but based upon your own functional requirements.
8. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
9. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.7 Implementing Portlet Security

Portlet security refers to the techniques and methods used by portlets to control their access by end users. The portlets leave authentication to OracleAS Portal and trust that the portal will return them to the correct, validated user upon request.

OracleAS Portal strictly controls access to information and applications by assigning specific privileges to users and groups. Portal security services allow you to specify access control programmatically and check for the appropriate privileges at runtime. Security mechanisms used by portlets ensure that only authorized users gain access to these portlets. These security services are available through the `wwsec_api` package.

Portlet security is invoked when a portlet is displayed on a portal page and when a portlet is returned in a portlet list by the `get_portlet_list` function for database providers. Security services in the Portal framework have the following key features:

- **Portlet Display:** Before a portlet is displayed on a page, the provider checks for the portlet's access privileges. The provider needs to define the `is_portlet_runnable` function which calls the portlet's `is_runnable` function to check access privileges.
- **User Group:** You can find which default group a user belongs to by using the `wwsec_api.get_defaultgroup` function.
- **Check Privileges:** You can find whether a user or group has the required privileges to personalize a portlet by using the `wwsec_api.has_privilege` function.
- **Highest Privilege:** You can find the highest available privilege of a user across all groups by using the `wwsec_api.get_privilege_level` function.
- **Accessible Objects:** You can find all the objects to which a user has access, given a privilege level, by using the `wwsec_api.accessible_objects` function. You can find other similar associated functions in the API documentation. The API Reference can be found on Portal Center (<http://portalcenter.oracle.com>) or, if you downloaded PDK-PL/SQL (`pdkplsql.zip`), in `..\pdkplsql\pdk\plsql\doc`.

8.7.1 Using Security

To implement PL/SQL portlet security, the portal requires the function `is_portlet_runnable` be implemented by database providers. The actual implementation of this function is up to the application; that is, the security scheme that determines whether the current user has enough privileges to access the portlet is defined by the individual portlet implementation. The portal also requires the function `get_portlet_list` for database providers to return the set of portlets that are accessible by the current user.

8.7.1.1 Guidelines for Using the Security APIs

The portlet security mechanism may use the context and security subsystem APIs and infrastructure. The context APIs can be used to retrieve information about the current user. The security subsystem can be used to check the privileges of the current user.

Note: For more information on the context and security subsystem APIs, see the PL/SQL API Reference. The API Reference can be found on Portal Center (<http://portalcenter.oracle.com>) or, if you downloaded PDK-PL/SQL (`pdkplsql.zip`), in `..\pdkplsql\pdk\plsql\doc`.

While using these APIs, keep in mind the following:

- Only authorized users should be able to see your portlet in the Add Portlet dialog. This objective can be accomplished by implementing the `is_portlet_runnable` function in the provider. You can also allow public access to your portlet.
- If a portlet does not want to render itself to a user, it should return no HTML or return an exception that the page engine will ignore. It should not return an error message. Doing so adds unnecessarily to the error stack, which has its limits. Refer to [Section 8.9, "Implementing Error Handling"](#) for more information.

- Portlet security allows the portlet to perform a runtime security check to ensure that the current user has the necessary authorization to access the portlet.
- When a portlet is rendered in Show mode, it may call the `is_runnable` method for database providers to determine whether the portlet should be displayed for the currently logged on user. The portal does not make the call to this function directly. It is not a requirement, however, for the portlet to make this call. The portlet should make this call in its Show mode only if it implements portlet security.
- The result of the call to `is_runnable` determines whether the portlet is actually displayed. If the result is `true`, the portlet displays; otherwise it does not display. The portlet is rendered in Show mode when it is displayed in a portal page.
- When a portlet is returned in a portlet list by a call to the provider function `get_portlet_list`, the value of the `p_security_level` parameter determines the purpose of the function call. When the call is made from the Portlet Repository refresh operation in order to retrieve the master list of portlets that the provider implements, the parameter `p_security_level` has a value of `false`. This setting indicates to the provider that no portlet security check should be made and a master list of all the portlets that the provider implements must be returned. The master list of portlets returned in this case is used to populate the Portlet Repository for that provider.
- If the value of `p_security_level` is `true`, then it is up to the provider implementation to decide whether portlet security should be performed. If portlet security is implemented, the provider may return a different list of portlets depending on the current user.
- When the Portlet Repository is displayed, OracleAS Portal calls the `is_portlet_runnable` function for database providers for each of the portlets that exist in the Portlet Repository. This step is done to display only the portlets that the currently logged on user is authorized to see. One example where the Portlet Repository is displayed is in the Add Portlets dialog.

8.7.2 Coding Security

The services example, located in `.. \pdkplsql \pdk \plsql \svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement security. You can browse through this example as follows to see how the security functions are implemented in a portlet:

1. Open the `services_provider.pkb` file in an editor.
2. Find the `is_portlet_runnable` function. This function calls the security implementation through the portlet's `is_runnable` function to check portlet access privileges.

```
function is_portlet_runnable
(
    p_portlet_instance in wwpro_api_provider.portlet_instance_record
)
return boolean
is
begin
    if (p_portlet_instance.portlet_id = SERVICES_PORTLET_ID) then
        return services_portlet.is_runnable(
            p_provider_id      => p_portlet_instance.provider_id
            ,p_reference_path => p_portlet_instance.reference_path
        );
    end if;
end;
```

```

else
    raise wwpro_api_provider.PORTLET_NOT_FOUND_EXCEPTION;
end if;
end is_portlet_runnable;

```

- Find the `get_portlet_list` procedure. `get_portlet_list` allows the portlet to be included in the list of portlets implemented by this provider. `get_portlet_list` first checks the security flag (`p_security_level`) to find out whether security is enabled. If the flag is set to true, `get_portlet_list` uses `is_runnable` to check whether the portlet is accessible. The value of the `p_security_level` parameter indicates whether to perform security checks before returning a portlet in the list. When a portlet repository refresh operation retrieves the master list of portlets implemented by the provider, `p_security_level` has a value of false. A value of false means the provider does not need to perform a security check and that a master list of all of the portlets implemented by the provider must be returned. The master list of portlets returned is used to populate the portlet repository for that provider. If the value of `p_security_level` is true, then the provider implementation decides whether to perform portlet security checks. If portlet security is implemented, the provider may return a different list of portlets depending on the currently logged on user.

```

function get_portlet_list
...
    if (p_security_level = false) then
        l_cnt := l_cnt + 1;
        l_portlet_list(l_cnt) := get_portlet(
            p_provider_id => p_provider_id
            ,p_portlet_id   => SERVICES_PORTLET_ID
            ,p_language    => p_language
        );
    else
        if (services_portlet.is_runnable(
            p_provider_id => p_provider_id
            ,p_reference_path => null)
        ) then
            l_cnt := l_cnt + 1;
            l_portlet_list(l_cnt) := get_portlet(
                p_provider_id => p_provider_id
                ,p_portlet_id   => SERVICES_PORTLET_ID
                ,p_language    => p_language
            );
        end if;
    ...
end get_portlet_list;

```

- Open the `services_portlet.pkb` file in an editor.
- Find the `show` procedure. Before displaying a portlet, the `show` procedure runs a security check to determine whether the current user is allowed to see the portlet.

```

procedure show
...
    -- Perform a security check
    if (not is_runnable(
        p_provider_id   => p_portlet_record.provider_id
        ,p_reference_path => p_portlet_record.reference_path)
    ) then
        werr_api_error.add(
            DOMAIN, SUBDOMAIN,
            'securityerr', 'services_portlet.show');
    ...

```

```

        raise wwpro_api_provider.PORTLET_SECURITY_EXCEPTION;
    end if;
    ...
end show;

```

6. Find the `is_runnable` function. `is_runnable` is the place where you implement your security checks. In this example, the security check is quite simple. If the user is logged on (that is, not in a public session), then the function returns `true` and the portlet is displayed to the user. For your own purposes, you could, of course, code much more complex security checks in the `is_runnable` function.

```

function is_runnable
(
    p_provider_id in integer
    ,p_reference_path in varchar2
)
return boolean
is
begin
    --
    -- Portlet security check. It allows the portlet to be visible
    -- if the user is logged on, i.e. the current session is not a
    -- public session.
    --
    return wwctx_api.is_logged_on;
end is_runnable;

```

7. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
8. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.8 Improving Portlet Performance with Caching

OracleAS Portal provides for the caching of PL/SQL portlets. This functionality permits PL/SQL portlets to cache their Web content on the middle tier. Subsequent requests for the content may be retrieved from the cache, with or without validation from the database, decreasing the database workload.

OracleAS Portal provides three types of caching for your PL/SQL portlets:

- **Validation-based caching** compares a key value to check whether the contents of the cache are still valid. If the key value does not change, it uses the cached content. Otherwise, it makes a round trip to the portal node to fetch the portlet content.
- **Expiry-based caching** uses a given expiration period for the contents of the cache when rendering the portlet. This form of caching is useful for content that changes infrequently or at very regular intervals (for example, every day at the close of business).
- **Invalidation-based caching** is the most complex form of caching but also the most flexible. The objects in OracleAS Web Cache are considered valid as long as they are not invalidated explicitly. You can also combine invalidation-based caching with either expiry-based or validation-based caching.

Because OracleAS Portal supports user personalization of pages and portlets, the view of a page can vary from one user to another. OracleAS Portal's caching is designed to allow content to vary on a per-user basis, even if the URL is the same across all users. Therefore, portal objects can be cached at either the user level or the system level:

- **User-level caching** is for a specific user. The cache entries are unique for that user and cannot be accessed by other users.
- **System-level caching** is for all users. One cache entry is used for all users. Examples of content that might be suitable for system-level caching are page banners and news portlets.

When a database provider issues a request for a portlet, the request is sent to the portlets's `show` procedure. This procedure accepts the `portlet_runtime_record` as a parameter. This record structure contains fields that can be examined and set by the portlet to enable caching. The caching control fields of this record are:

- **caching_key**: This value is communicated in the `ETAG` header for this request and returned back to the portlet provider in subsequent requests. Setting this field enables validation-based caching.
- **caching_period**: This field enables expiry-based caching. The value is the number of minutes the content should be held in the cache. This mode overrides validation-based caching. If a value is set for this field, then the `caching_key` field is ignored.
- **caching_level**: This field defines whether the content is meant for general use or for a specific user. The valid values are `SYSTEM` and `USER`.

8.8.1 Using Caching

The general model for working with portlet caching varies according to the type of caching you choose. To a great extent, the type of caching you choose depends on the portlet content. If the portlet content changes at fairly regular intervals (for example, at the close of business every day), then it probably makes sense to use expiry-based caching. If the portlet content changes at irregular intervals, then validation- or invalidation-based caching is probably best.

8.8.1.1 Validation-Based Caching

If you choose validation-based caching, the general model is as follows:

1. Set the `caching_key` field of the `portlet_runtime_record` parameter. Add a check to compare the value of the current key with the value of the `caching_key` field of the `portlet_runtime_record` parameter. Note that the first time the `show` procedure is called, the key is null and its value must be set.
2. Determine whether you want to use system or user level caching. Set the `caching_level` field of the `portlet_runtime_record` parameter accordingly.

8.8.1.2 Expiry-Based Caching

If you choose expiry-based caching, the general model is as follows:

1. Set the `caching_period` field of the `portlet_runtime_record` parameter to the desired interval for the cache (in minutes).
2. Determine whether you want to use system or user level caching. Set the `caching_level` field of the `portlet_runtime_record` parameter accordingly.

8.8.1.3 Invalidation-Based Caching

If you choose invalidation-based caching, the general model is as follows:

1. Indicate to OracleAS Portal that it must generate specific headers for OracleAS Web Cache by calling `wwpro_api_provider.USE_INVALIDATION`.
2. Determine whether you want to use system or user level caching. Set the `caching_level` field of the `portlet_runtime_record` parameter accordingly.
3. Optionally, set up validation- or expiry-based caching as well.
4. Add invalidation logic to your portlet where needed (for example, when the portlet is personalized) and make appropriate calls to `wwpro_api_invalidation`.

8.8.2 Configuring and Monitoring the Cache

The *Oracle Application Server Portal Configuration Guide* describes how to configure caching as well as how to monitor and tune performance.

8.8.3 Implementing Validation-Based Caching

The caching example, located in `.. \pdkplsql \pdk \plsql \cache` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement validation and expiry-based caching. You can browse through this example as follows to see how the validation-based functions are implemented in a portlet:

1. Open the `validcache_portlet.pkb` file in an editor.
2. At the very top of the file, notice the aliases for the caching level constants.

```
CREATE OR REPLACE
package body VALIDCACHE_PORTLET
is
    -- Caching Constants
    CACHE_LEVEL_SYSTEM constant varchar2(10) := 'SYSTEM';
    CACHE_LEVEL_USER   constant varchar2(10) := 'USER';
```

3. Find the `show` procedure. Notice first that the `p_portlet_record` is an in and out parameter for this procedure.

```
procedure show
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
```

4. In the procedure's security check, the caching fields of `p_portlet_record` are set to null if the security check fails.

```
begin
    if (not is_runnable(
        p_provider_id => p_portlet_record.provider_id
        ,p_reference_path => p_portlet_record.reference_path)
    ) then
        -- Set it to null so that cache does not get used even if exists
        p_portlet_record.caching_level := null;
        p_portlet_record.caching_key := null;
        raise wwpro_api_provider.PORTLET_SECURITY_EXCEPTION;
    end if;
```

5. After that, the procedure calls the `get_cache_key` function to get the cache key's value and assign it to a temporary value:

```
--  
-- CACHE IS VALID?  
--  
l_cache_key := get_cache_key();
```

6. Find the `get_cache_key` function, which is referenced from the `show` procedure. This function generates a key for the portlet. You can implement your own logic here based upon your portlet's requirements.

```
function get_cache_key  
return varchar2  
is  
    l_date date;  
begin  
    select sysdate into l_date from dual;  
    return trim(substr(to_char(l_date, 'YYYY:MM:DD:HH:MI:SS'),1,18));  
exception  
    when others then  
        null;  
end get_cache_key;
```

7. Now return to the `show` procedure. Notice how the code checks your `portlet_runtime_record` parameter for the current values of the `caching_key` and the `caching_level`. This same piece of code can compare your `caching_key` values.

```
if p_portlet_record.caching_level = CACHE_LEVEL_SYSTEM then  
    if l_cache_key is not null then  
        -- Cache exists for the user, overwrite it  
        p_portlet_record.caching_level := CACHE_LEVEL_USER;  
        p_portlet_record.caching_key := l_cache_key;  
    else  
        return; -- System cache is still valid.  
    end if;  
elsif p_portlet_record.caching_level = CACHE_LEVEL_USER then  
    if p_portlet_record.caching_key != l_cache_key then  
        -- cache has expired. reset it  
        p_portlet_record.caching_key := l_cache_key;  
    else  
        return; -- User cache is good as gold  
    end if;  
elsif p_portlet_record.caching_level is null then  
    if p_portlet_record.caching_key is not null then  
        -- Cache does not exists for the user, create it  
        p_portlet_record.caching_level := CACHE_LEVEL_USER;  
        p_portlet_record.caching_key := l_cache_key;  
    else  
        -- Define a sytem cache. This can happen only once!  
        -- the first time the portlet is rendered.  
        p_portlet_record.caching_level := CACHE_LEVEL_SYSTEM;  
        p_portlet_record.caching_key := 'MY_INITIAL_CACHE_KEY';  
    end if;  
else  
    p_portlet_record.caching_level := CACHE_LEVEL_SYSTEM;  
    p_portlet_record.caching_key := 'MY_INITIAL_CACHE_KEY';  
end if;
```

8. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
9. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.8.4 Implementing Expiry-Based Caching

The caching example, located in `..\pdkplsql\pdk\plsql\cache` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement expiry-based caching. You can browse through this example as follows to see how the expiry-based functions are implemented in a portlet:

1. Open the `expirycache_portlet.pkb` file in an editor.
2. At the very top of the file, notice the aliases for the caching level constants.

```
CREATE OR REPLACE
package body VALIDCACHE_PORTLET
is
    -- Caching Constants
    CACHE_LEVEL_SYSTEM constant varchar2(10) := 'SYSTEM';
    CACHE_LEVEL_USER   constant varchar2(10) := 'USER';
```

3. Find the `show` procedure. Notice first that the `p_portlet_record` is an in and out parameter for this procedure.

```
procedure show
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
```

4. In the procedure's security check, the caching fields of `p_portlet_record` are set to null if the security check fails.

```
begin
    if (not is_runnable(
        p_provider_id => p_portlet_record.provider_id
        ,p_reference_path => p_portlet_record.reference_path)
    ) then
        -- Set it to null so that cache does not get used even if exists
        p_portlet_record.caching_level := null;
        p_portlet_record.caching_key := null;
        raise wwpro_api_provider.PORTLET_SECURITY_EXCEPTION;
    end if;
```

5. After that, the procedure sets the value of the caching period in minutes in a temporary variable. The `get_cache_key` function to get the cache key's value and assign it to a temporary value:

```
-- Set the Caching Period to one minute
l_cache_period := 1;
```

6. Next, notice how the code checks your `portlet_runtime_record` parameter for the current values of the `caching_period` and sets the `caching_period` accordingly. This same piece of code can compare your `caching_period` values.

```
if p_portlet_record.caching_level = CACHE_LEVEL_SYSTEM then
    -- Cache does not exists for the user, create it
    p_portlet_record.caching_level := CACHE_LEVEL_USER;
```

```

        p_portlet_record.caching_period := l_cache_period;
    elsif p_portlet_record.caching_level = CACHE_LEVEL_USER then
        -- Cache exists for the user, overwrite it
        p_portlet_record.caching_period := l_cache_period;
    elsif p_portlet_record.caching_level is null then
        if p_portlet_record.caching_period is not null then
            -- Cache does not exists for the user, create it
            p_portlet_record.caching_level := CACHE_LEVEL_USER;
            p_portlet_record.caching_period := l_cache_period;
        else
            -- Define a sytem cache. This can happen only once!
            p_portlet_record.caching_level := CACHE_LEVEL_SYSTEM;
            p_portlet_record.caching_period := l_cache_period;
        end if;
    else -- p_portlet_record.caching_level value is messed up!
        p_portlet_record.caching_level := CACHE_LEVEL_SYSTEM;
        p_portlet_record.caching_period := l_cache_period;
    end if;

```

7. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
8. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.8.5 Implementing Invalidation-Based Caching

Suppose you have a portlet that displays a map of the world, `map_portlet.pkb` and `map_portlet.pks`. You would go about adding invalidation-based functions to it as follows:

1. In the show procedure, you need to add a call to `wwpro_api_provider.use_invalidation`. This call indicates to OracleAS Portal that the portlet content should be cached by OracleAS Web Cache. Note that we have also specified that the content be cached at the user level and that expiry-based caching be used as well (that is, an expiration interval of one minute has been set).

```

procedure show
...
    if (p_portlet_record.exec_mode = wwpro_api_provider.MODE_SHOW) then
        p_portlet_record.caching_invalidation :=
            wwpro_api_provider.use_invalidation;
        p_portlet_record.caching_level := 'USER';
        p_portlet_record.caching_period := 1;
    ...

```

2. Create a procedure in your `map_portlet.pkb` file that invalidates the cache. For example:

```

procedure map_invalidation
(
    p_provider_id in number,
    p_portlet_id in number,
    p_instance_id in varchar2,
    p_page_url in varchar2
)
is
begin

```

```

wwpro_api_invalidation.invalidate_by_instance
(p_provider_id => p_provider_id,
 p_portlet_id => p_portlet_id,
 p_instance_id => p_instance_id,
 p_user => wwctx_api.get_user);
owa_util.redirect_url(p_page_url);
end map_invalidation;

```

3. In the show procedure, add a link for refreshing the portlet before the code that draws the map. For example:

```

/* Draw the Refresh Me link */
http.anchor(
  curl => wwctx_api.get_user ||
    '.map_invalidation?p_provider_id=' || p_portlet_record.provider_id ||
    '&p_portlet_id=' || p_portlet_record.portlet_id ||
    '&p_instance_id=' || p_portlet_record.reference_path ||
    '&p_page_url=' || utl_url.escape(
      url => p_portlet_record.page_url,
      escape_reserved_chars => TRUE),
  ctext => wwui_api_portlet.portlet_text(
    p_string => 'Refresh Me',
    p_level => 1)
);

```

4. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
5. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.9 Implementing Error Handling

OracleAS Portal provides the capability for you to trap erroneous input and return meaningful error messages. It manages the internal error stack by tracking the raised exceptions and retaining information about them. OracleAS Portal also includes a set of APIs for presenting errors in a standardized way.

Error handling services are available through the `wwerr_api_error` and `wwerr_api_error_ui` packages. These error handling services include the following key features:

- **Error stack.** OracleAS Portal uses an error stack to keep track of the error messages. When an error occurs, the error message is pushed onto an error stack. Whenever procedures or function calls are nested, the error stack keeps track of all the error messages. You can choose to retrieve only the top error (or most recent error) by using the `wwerr_api_error.get_top` method. Alternatively, you can get all the error messages on the stack using the `wwerr_api_error.get_errors` function. The stack can also be checked for the presence of any errors by calling the `wwerr_api_error.is_empty` function.
- **Error messages.** Error handling services provide a way to define meaningful error messages. To define your own error messages, you need to define their name space. The name space consists of the following:
 - **Name** is the error name.
 - **Domain** is the area of the product where the error occurred.

- **Subdomain** is the subsystem where the error occurred.
- **Context** is the name of the function where the error occurred.

The name space uniquely identifies your error message. If it does not do so, a `wwc-0000` error message is generated.

The default domains include the portal (`wwc`), application (`www`), and page groups (`wws`). Each domain is further classified into subdomains, which define the object types. The portal domain includes the portlet, page, and document object types. The application domain includes object types such as forms, menus, reports, and charts. The page group domain includes object types such as pages, items, categories, and perspectives. If you need to define an error that does not fall within these classifications, you can define your own domain with subdomains for your errors.

- **Message parameters.** The other language strings that you create for your errors can take substitution parameters for your messages. The `p1`, `p2`, `p3`... parameters can be used to pass substitution parameters to the error messages. For example, for this string:

```
(domain='yahoo', subdomain='provider', name='generalerror', string='Error: %1')
```

an error can be added as follows:

```
wwerr_api_error.add(p_domain=>'yahoo', p_sub_domain=>'provider',
  p_name=>'generalerror', p_context=>'yahoo.show', p1=> sqlerrm);
```

- **Error display.** The `wwerr_api_error_ui` package provides a means to generate a standard user interface for displaying the errors in OracleAS Portal. The error messages can be displayed in two different ways:
 - **Full screen user interface:** These error messages are displayed in a full screen mode. You may want to display full screen errors when the system encounters fatal or show-stopper errors.
 - **Inline user interface:** These error messages are displayed within the current page itself. You may use inline errors for minor errors or warnings.

Additionally, you can choose the output format of the display (HTML, XML, or ASCII text).

8.9.1 Using Error Handling

In general, you set up error handling as follows:

1. On detecting error conditions, add the error message, with an appropriate domain and sub-domain combination, to the stack using the `wwerr_api_error.add` procedure.
2. When necessary (for example, at the end of a routine), expose the error messages using the `wwerr_api_error_ui` procedures. To display full screen messages, use the procedures `show_html`, `show_xml`, or `show_text` depending on your preferred output type. To display inline messages, use the procedures `show_inline_html`, `show_inline_xml`, or `show_inline_text`, depending on the output type you desire.

8.9.1.1 Guidelines for Error Handling

While implementing error handling, keep in mind the following:

- While defining your own error messages, use your own error domain for these messages. Never use the `WWC`, `WWV`, or `WWS` domain for your error messages. You will need to write a small loader script to load these into the other language tables.
- Avoid unnecessary error messages. If you do not want to do anything in a function, just return `null` rather than an error. For example, suppose you are coding a `copy_portlet` procedure for your portlet because the provider calls it for all of its other portlets. If you do not wish the `copy_portlet` procedure for this particular portlet to do anything, then simply have it return `null`. If you return errors, it will unnecessarily disrupt the portlet functionality.
- A maximum of ten error messages is kept on the stack. Beyond ten, messages are ignored when a call to `wwerr_api_error.add` is made.
- Use the API as a programmatic way of finding the problem. You can use the non-user-interface format for this purpose. For example, when you programmatically register a provider, the exception block can use `get_text_stack` to get the error messages and print them. This approach helps when debugging calls to public APIs since all of them add errors to the stack for exceptions.
- Remember to seed the other language strings for your error messages. For more information, refer to [Section 8.11, "Writing Multilingual Portlets"](#).
- The standard user interface for error messages provides a navigation link back to the previous page. It also includes a Help icon for the specified help URL.

8.9.2 Adding Error Handling

The services example, located in `.. \pdkplsql \pdk \plsql \svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement error handling. You can browse through the following example to see how the error handling functions are implemented in a portlet:

1. Open the `services_portlet.pkb` file in an editor.
2. The domain and subdomain definitions for your error messages are provided with aliases in the constants part of your portlet definition.

```
DOMAIN          constant varchar2(30) := 'provider';
SUBDOMAIN       constant varchar2(32) := 'services';
PORTLET_PATH    constant varchar2(256) := 'oracle.portal.pdk.servicesportlet';
PREFNAME_STRING constant varchar2(30) := 'services_string';
PREFNAME_TITLE  constant varchar2(30) := 'services_title';
```

3. Find the `show` procedure. This procedure performs a security check and, if an error condition arises, it calls `wwerr_api_error.add` to push the `securityerr` error message onto the stack.

```
procedure show
(
  p_portlet_record          wwpro_api_provider.portlet_runtime_record
)
is
...
begin
  -- Perform a security check
  if (not is_runnable(
    p_provider_id => p_portlet_record.provider_id
    ,p_reference_path => p_portlet_record.reference_path)
  ) then
```

```

wwerr_api_error.add(
    DOMAIN, SUBDOMAIN,
    'securityerr', 'services_portlet.show');
raise wwpro_api_provider.PORTLET_SECURITY_EXCEPTION;
end if;

```

4. The show procedure also checks for any other kind of execution mode and generates an appropriate error message for an invalid display mode.

```

if (p_portlet_record.exec_mode = wwpro_api_provider.MODE_SHOW) then
...
elsif (p_portlet_record.exec_mode = wwpro_api_provider.MODE_SHOW_EDIT)
...
else
    wwerr_api_error.add(DOMAIN, SUBDOMAIN,
        'invaliddispmod', 'services_portlet.show');
    raise wwpro_api_provider.PORTLET_EXECUTION_EXCEPTION;
end if;

```

5. Lastly, the show procedure implements a general error message in the exception handler to catch any errors not trapped by the preceding conditions.

```

exception
    when others then
        wwerr_api_error.add(
            DOMAIN, SUBDOMAIN,
            'generalerr', 'services_portlet.show');
        raise wwpro_api_provider.PORTLET_EXECUTION_EXCEPTION;
end show;

```

6. Error handling is also implemented in the save_prefs and save_default_prefs procedures. They check whether the error stack is empty and, if it is not, the portlet makes a call to wwerr_api_error.show_html to display the error in full screen mode.

```

exception
    when INVALID_TEXT_EXCEPTION then
        l_information := l_user||'%'||l_time
            ||'%INVALID_TEXT_EXCEPTION%'||p_string;
        l_action := LOG_FAILED;
        wwlog_api.log (p_domain => DOMAIN,
            p_subdomain => SUBDOMAIN,
            p_name => l_user,
            p_action => l_action,
            p_information => l_information,
            p_url => l_url,
            p_row_count => 0,
            p_elapsed_time=> l_elapsed_time);
        wwerr_api_error.add(DOMAIN, SUBDOMAIN,
            'invalid_text', 'services_portlet.save_prefs');
        if (not wwerr_api_error.is_empty) then
            wwerr_api_error_ui.show_html;
        end if;
end save_prefs;

```

7. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.

8. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.10 Implementing Event Logging

OracleAS Portal can log events that occur during transactions with its objects. It stores these logs in the database, which makes them available through standard SQL calls and reporting tools.

You can choose the events you would like to log and organize them categorically based on user-defined domains and subdomains. For the logged events, you can view information about the event, the time the event started and stopped, the host or IP address of the remote user, the browser type, and the language.

Event logging services are available through the `wwlog_api` and `wwlog_api_admin` packages. These services include the following key features:

- Event logs are useful for tracking specific usage of the portal. To track such information, you create a log event. Log events require a name space that consists of the following:
 - **Name**, which is the event name.
 - **Domain**, which is the area of the product where the event occurred.
 - **Subdomain**, which is the subsystem that generated the event.

The default domains include the portal (`WWC`), application (`WWV`), and page group (`WWS`). Each domain is further classified into subdomains that define the object types. The portal domain includes the portlet, page, and document object types. The application domain includes object types such as forms, menus, reports, and charts. The page group domain includes object types such as folders, items, categories, and perspectives. Events themselves could be of types such as add, delete, personalize, hide, copy, execute, and export. If you need to define an event that does not fall within these classifications, you can define your own domain with subdomains for your events.

- Logs can track information in two different ways:
 - Interval logging calculates the elapsed time for the action performed (for example, the time taken to render a portlet).
 - Event logging logs the occurrence of a single step event you care about (for example, whenever a user personalizes a portlet).
- Log switching enables you to set a switch interval that defines how long you want to maintain your existing log records. The log information stored in the database uses two different tables. The log records are purged based on the value entered for the **Activity Log Interval** in the **Configuration** tab of **Global Settings** (accessible from the Services portlet in the **Portal** subtab of the **Administer** tab). When the log interval (in days) is reached, the logging switches between the two logging tables in the database (for example, A and B). Logs first go into A. When the log interval is reached the first time, the logs are written to B. When the log interval is reached again, the logs go back to A. A is emptied in preparation to store the new log records. If you set your log interval to 14 (the default setting), the logs will switch every 14 days, thus preserving for you, at any point in time, records dated between 14 and 28 days old.

8.10.1 Using Event Logging

In general, you can set up event logging as follows:

1. Add the event object, with an appropriate domain and subdomain combination, using `wwlog_api_admin.add_log_event`. Adding the event ensures that lists of values and other user interface components invoked when the user is monitoring the events show this new event in their lists.
2. Register the log event record by using `wwlog_api_admin.add_log_registry`. The log registry record represents the events you want to log in the future and provides a means to filter the events that need to be logged.
3. Use `start_log` and `stop_log` to mark the events you want to log in your code. Alternatively, for entering single step event log information, just call the `log` method to mark that event.

8.10.1.1 Guidelines for Event Logging

While implementing event logging, keep in mind the following:

- Log only what you really care about to improve performance. You don't want to flood the system with log messages that are irrelevant to you. If events are logged in Show mode, then multiple instances of these portlets mean additional hits to the database.
- Choose your domain, subdomain, and log events carefully. While using the log APIs, do not use the OracleAS Portal domains such as `WWC`, `WWV`, or `WWS` for your log messages. Organize your domains and subdomains hierarchically ensuring that they are unique across portlets. If other portlets happen to use the same domains or subdomains, you will see those log messages interspersed with your own.
- Create log events that show up in the pop-up lists of values monitoring the logs. You can simply create log registry records that filter the events that would actually be logged, either by specifying particular events or using the generic filters with wild cards (%). Apart from creating log registry records, we recommend that you create log events for events that you want to monitor. This way the lists of values in the user interface show these records for additional functions such as monitoring.
- Provide required privileges to users or user groups who need to monitor the logs. Any logs created by a user can be viewed by that user, the Portal Administrator, and any user with the Edit privilege on the `ANY_LOGS` object type.

8.10.2 Adding Event Logging

The services example, located in `.. \pdkplsql\pdk\plsql\svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement event logging. You can browse through this example as follows to see how the event logging functions are implemented in a portlet:

1. Open the `services_portlet.pkb` file in an editor.

The domain and subdomain definitions for your log messages are provided with aliases in the constants part of your portlet definition.

```
DOMAIN          constant varchar2(30) := 'provider';
SUBDOMAIN       constant varchar2(32) := 'services';
PORTLET_PATH    constant varchar2(256) := 'oracle.portal.pdk.servicesportlet';
PREFNAME_STRING constant varchar2(30) := 'services_string';
PREFNAME_TITLE  constant varchar2(30) := 'services_title';
```

- Find the `save_prefs` procedure. This procedure provides personalizable functionality where you can personalize text and the portlet title in Edit mode. `save_prefs` stores these personalizations in the database. While saving the changes, you should also log them. Hence, this procedure provides an ideal example of implementing the logging service. A single step event is logged using `wwlog_api.log`. The first instance of `wwlog_api.log` logs the event of personalizing text. The second instance logs the event of personalizing the portlet title.

```

procedure save_prefs
...
begin
...
    if (l_prefs.string_id is null or to_number(l_prefs.string_id) = 0)
    then
        l_action := LOG_INSERT;
    ...
    else -- string exists in at least one language so update it
        l_action := LOG_UPDATE;
    ...
    end if;
-- Log this transaction
l_information := l_user||' '||l_time||'%completed%'||p_string;
wwlog_api.log (p_domain      => DOMAIN,
               p_subdomain   => SUBDOMAIN,
               p_name        => l_user,
               p_action      => l_action,
               p_information => l_information,
               p_url         => l_url,
               p_row_count   => l_row_count,
               p_elapsed_time=> l_elapsed_time);
...
    if (l_prefs.title_id is null or to_number(l_prefs.title_id) = 0)
    then
        l_action := LOG_INSERT;
    ...
    else
        l_action := LOG_UPDATE;
    ...
-- Log this transaction
l_information := l_user||' '||l_time||'%completed%'||p_title;
wwlog_api.log (p_domain      => DOMAIN,
               p_subdomain   => SUBDOMAIN,
               p_name        => l_user,
               p_action      => l_action,
               p_information => l_information,
               p_url         => l_url,
               p_row_count   => l_row_count,
               p_elapsed_time=> l_elapsed_time);
...
end save_prefs;

```

- The `save_prefs` procedure also logs an event with `wwlog_api.log` when an exception occurs.

```

exception
when INVALID_TEXT_EXCEPTION then
    l_information := l_user||' '||l_time
                  ||'%INVALID_TEXT_EXCEPTION%'||p_string;

```

```

l_action      := LOG_FAILED;
wwlog_api.log (p_domain      => DOMAIN,
              p_subdomain   => SUBDOMAIN,
              p_name        => l_user,
              p_action      => l_action,
              p_information => l_information,
              p_url         => l_url,
              p_row_count   => 0,
              p_elapsed_time=> l_elapsed_time);
...

```

4. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
5. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.11 Writing Multilingual Portlets

OracleAS Portal has a robust set of APIs for interacting with OracleAS Portal multilingual storage facility. This storage facility provides a mechanism for storing and retrieving strings in different languages. These APIs abstract the native multilingual functionality and provide developers with a powerful storage mechanism for developing providers that support different language environments.

Multilingual services are available through the `wnnls_api` package. These services include the following key features:

- The multilingual APIs enable the provider to load several translations for the strings displayed in their portlets. Once the strings have been loaded, the provider can call the APIs to retrieve the strings from the multilingual table as needed.
- Context APIs retrieve the user's language and the appropriate translation for that language. The Context APIs determine the user's language environment from the language setting in the browser. When a requested translation does not exist, the APIs return the base language translation.

For example, assume that the provider's `register` procedure loads US and French translations for the portlet title. When the portlet is rendered, the provider implementation retrieves the portlet title string from the table and displays the following results:

- A request for a French string causes the portlet title to appear in French.
- A request for a US string causes the portlet title to appear in US English.
- A request for a Chinese string causes the portlet title to appear in US English because we did not load a translation for the Chinese language.

8.11.1 Using Multilingual Support

In general, you can set up multilingual support as follows:

1. Load your string definitions into the database using the string equivalents for each language you intend to use. For this purpose, call the `wnnls_api.add_string` or `wnnls_api.set_string` with an appropriate domain, subdomain, error message name, and error text combination.

2. Retrieve the strings you require with `wnls_api.get_string` for the language that you desire.

8.11.2 Adding Multilingual Support

To add multilingual support, you need to perform the following tasks:

- [Loading Language Strings](#)
- [Retrieving Language Strings](#)

8.11.2.1 Loading Language Strings

Language strings can be loaded by a script that is part of the provider installation. This script calls `add_string` and `set_string` to create equivalent strings for different languages.

OracleAS Portal uniquely identifies language strings using a combination of domain, subdomain, and name. The domain and subdomain provide a way to categorize the strings. The domain and subdomain should be unique enough to reasonably preclude conflicts with other users of the APIs.

- A *domain* is a particular area of the product. An example of a domain could be provider or page group.
- A *subdomain* is a subsystem of the domain. For example, the subdomain could be the provider name (for example, HelloProvider) or subpage name (for example, HelloPage).

The services example, located in `.. \pdkplsql \pdk \plsql \svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement multilingual support. You can browse through this example as follows to see how to load strings for multilingual support:

1. Open the `services_seed.sql` file in an editor.
2. Notice the `add_string` call with the parameters for domain name, subdomain name, string name, language, and the actual string text. It returns the String ID for the language string. For setting equivalent strings in other languages, `set_string` is called with the same parameters.

```
set serveroutput on size 1000000
set define off

declare
    l_string_id integer;
    l_person_id integer;
    l_group_id integer;
begin
    ...
    -- strings for portlet record fields
    l_string_id := wnls_api.add_string(
        'provider','services','ptldefname','us','DatabaseServicesPortlet');
    wnls_api.set_string(
        'provider','services','ptldefname','d','DatenbankServicesPortlet-d');
    l_string_id := wnls_api.add_string(
        'provider','services','ptldeftitle','us','Database Services Portlet');
    wnls_api.set_string(
        'provider','services','ptldeftitle','d','Datenbank Services Portlet - d');
    l_string_id := wnls_api.add_string(
        'provider','services','ptldefdesc','us','This is the database services
portlet implemented in PL/SQL. It displays 6 show modes.');
```

```

wwnls_api.set_string(
  'provider','services','ptldefdesc','d','Dies ist das Datenbank Service
Portlet, erstellt in PL/SQL. Es stellt 6 Anzeigemodi dar. - d');
l_string_id := wwnls_api.add_string(
  'provider','services','ptldevtmsg','us','Web Services Portlet Timed
Out.');
```

```

wwnls_api.set_string(
  'provider','services','ptldevtmsg','d','Zeitüeberschreitung aufgetreten
in Web Services Portlet. -d');
```

8.11.2.2 Retrieving Language Strings

The services example, located in `.. \pdkplsql\pdk\plsql\svcx` in PDK-PL/SQL (`pdkplsql.zip`), illustrates how you can implement multilingual support. You can browse through this example as follows to see how to retrieve strings for multilingual support:

1. Open the `services_portlet.pkb` file in an editor.
2. The domain and subdomain definitions for your language strings are provided with aliases in the constants part of your portlet definition.

```

DOMAIN          constant varchar2(30) := 'provider';
SUBDOMAIN       constant varchar2(32) := 'services';
PORTLET_PATH    constant varchar2(256) := 'oracle.portal.pdk.servicesportlet';
PREFNAME_STRING constant varchar2(30) := 'services_string';
PREFNAME_TITLE  constant varchar2(30) := 'services_title';
```

3. Find the `get_portlet_info` procedure. Notice the calls to `wwnls_api.get_string` to populate the portlet title, name, and description.

```

function get_portlet_info
(
  p_provider_id in integer
  ,p_language in varchar2
)
return wwpro_api_provider.portlet_record
is
  l_portlet wwpro_api_provider.portlet_record;
begin
  l_portlet.id := services_provider.SERVICES_PORTLET_ID;
  l_portlet.provider_id := p_provider_id;
  l_portlet.language := p_language;
  l_portlet.title :=
    wwnls_api.get_string(
      p_domain => DOMAIN
      ,p_sub_domain => SUBDOMAIN
      ,p_name => 'ptldeftitle'
      ,p_language => p_language
    );
  l_portlet.description :=
    wwnls_api.get_string(
      p_domain => DOMAIN
      ,p_sub_domain => SUBDOMAIN
      ,p_name => 'ptldefdesc'
      ,p_language => p_language
    );
  l_portlet.name :=
    wwnls_api.get_string(
      p_domain => DOMAIN
      ,p_sub_domain => SUBDOMAIN
```

```

    ,p_name          => 'ptldefname'
    ,p_language     => p_language
  );
...

```

4. Browse the rest of the file to examine other usage examples of `wnls_api.get_string`, which is used in several other places in `services_portlet.pkb`.
5. Optionally, if you want to see this portlet on a page and it is not already in the Portlet Repository, refer to the instructions in [Section 8.3.2, "Implementing the Provider Package"](#) for information on how to add it.
6. Once your portlet appears in the repository, you can add it to a page to test it. To add your portlet to a page, follow the instructions in *Oracle Application Server Portal User's Guide*.

8.12 Enhancing Portlets for Mobile Devices

This section explains how to go about enhancing a portlet with PDK-PL/SQL for a mobile device. Before proceeding with this section, you should familiarize yourself with the guidelines for building mobile-enabled portlets, [Section 8.1.3, "Guidelines for Mobile Portlets"](#), and the methods of building portlets with PDK-PL/SQL, [Section 8.2, "Building PL/SQL Portlets with the PL/SQL Generator"](#) and [Section 8.3, "Building PL/SQL Portlets Manually"](#).

To properly build a portlet for a mobile device, do the following:

1. Set the portlet record attributes to support mobile output. Requests arriving from mobile devices through the mobile gateway need to be answered with OracleAS Wireless XML using the `text/vnd.oracle.mobilexml` content type in the header. A mobile-enabled portlet must specify that it can handle these types of requests and produce the mobile content accordingly.

[Table 8–6](#) lists the portlet record attributes pertinent to mobile portlets and explains how you should specify them.

Table 8–6 Portlet Record Attributes

Attribute	Description
<code>accept_content_type</code>	Specify a comma-delimited list of the content types that the portlet produces. If the portlet can produce both HTML and OracleAS Wireless XML, the string would be: <code>text/html, text/vnd.oracle.mobilexml</code> If the portlet can produce only OracleAS Wireless XML, the string would be: <code>text/vnd.oracle.mobilexml</code>
<code>mobile_only</code>	Indicate whether the portlet is available only to mobile pages. TRUE declares the portlet as mobile only, and it will not appear in the Add Portlets page for a standard page. FALSE declares the portlet as mobile and standard, and it will appear in the Add Portlets page for both standard and mobile pages. If the portlet only produces OracleAS Wireless XML and you set this flag to FALSE, the OracleAS Wireless XML is automatically transformed into HTML for desktop devices (such as a normal PC Web browser). This functionality enables you to develop portlets that output only OracleAS Wireless XML but can be viewed on standard pages for desktop access as well as for mobile access.

Table 8–6 (Cont.) Portlet Record Attributes

Attribute	Description
short_title	Enter a shorter version of the portlet title. This title is used on mobile devices because it is more likely to fit the smaller screen. If you do not set a short title, then the portlet title is used instead.
has_show_link_mode	Indicate whether you have implemented Link mode for the portlet. We recommend that all mobile portlets enable Link mode. The rationale for using Link mode is more fully explained when you reach step 3 below.

2. If the portlet can produce both HTML and OracleAS Wireless XML, then, during execution, it must determine whether the request is for a mobile or a desktop device. If it is a desktop request, then the portlet must produce HTML output. If it is a mobile request, then it must produce OracleAS Wireless XML output. You can determine the request type with the `wwctx_api.get_http_accept()`. It fetches the HTTP accept header, which indicates the request type. In the portlet response, you must set the MIME header to the appropriate value in the HTTP header before the portlet content is produced. If not, then the portlet response is rejected when the resulting page is built by OracleAS Portal. If the call to `wwctx_api.get_http_accept()` returns a string starting with `text/vnd.oracle.mobilexml`, then you can assume it is a mobile request. Otherwise, it is a desktop request. In the case of a mobile request, you should set the MIME header to `text/vnd.oracle.mobilexml`. In the case of a desktop request, you can explicitly set the MIME header to `text/html`, but it is not required that you do so because it's the default setting.

If you want to produce HTML for desktop requests and OracleAS Wireless XML for mobile requests, the show procedure for your portlet should look similar to the following:

```

procedure show
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
is
begin
    --
    -- Does the portal want us to render the portlet contents?
    --
    if (p_portlet_record.exec_mode = wwpro_api_provider.MODE_SHOW) then
        --
        -- Is this a mobile request?
        --
        if owa_util.get_cgi_env('HTTP_ACCEPT') like
            wwpro_login.CONTENT_TYPE_MOBILEXML || '%' then
            --
            -- This is a mobile request for the portlet contents
            -- call the mobile show contents procedure
            --
            render_mobile_show_contents(p_portlet_record);
        else
            --
            -- This is a desktop request for the portlet contents,
            -- call the desktop show contents procedure
            --
            render_desktop_show_contents(p_portlet_record);
        end if;
    end if;

```

```

        elsif -- check for other show modes, and handle them
        ...
end show;

```

If you want to produce only OracleAS Wireless XML for all requests, the show procedure for your portlet should look similar to the following:

```

procedure show
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
is
begin
    --
    -- Does the portal want us to render the portlet contents?
    --
    if (p_portlet_record.exec_mode = wwpro_api_provider.MODE_SHOW) then
        --
        -- This is either a desktop or mobile request for the portlet
        -- contents call the show contents procedure to render the
        -- OracleAS Wireless XML output
        --
        render_show_contents(p_portlet_record);
    elsif -- check for other modes
    ...
end show;

```

In order to generate OracleAS Wireless XML, the `render_show_contents` or `render_show_mobile_contents` procedure would need to contain something similar to the following:

```

...
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
is
begin
    --
    -- Set the MIME type to be Oracle9iAS Wireless XML
    --
    owa_util.mime_header('text/vnd.oracle.mobilexml');
    --
    -- Output the Oracle9iAS Wireless XML markup
    --
    http.p('<SimpleText><SimpleTextItem>');
    http.p('Hello World!');
    http.p('</SimpleTextItem></SimpleText>');
...

```

Note: As this is a mobile request the MIME header is set to `text/vnd.oracle.mobilexml`. In the OracleAS Wireless XML markup, you only need to render the actual content. OracleAS Portal fits it into the complete OracleAS Wireless XML document. You do not need `<SimpleResult>` or `<SimpleContainer>` tags. These tags are rendered by OracleAS Portal along with a back link, which, by default, is assigned to one of the buttons on the mobile device.

3. If you want your portlet to allow personalization of titles for mobile rendering, you need to implement Link mode. Link mode is only called for mobile requests and it renders a link to the portlet content. This link appears in the menu of page contents when the user first navigates to the page. If a Link mode is not present for a portlet, then OracleAS Portal renders a default link mode using the short title from the portlet record. You can also use Link mode to render more than just a title. For example, in a stock portlet, you could render the stock price of a user's favorite stock. Thus, they could see the current stock price without drilling down further.

The link for Link mode rendition is provided by OracleAS Portal and passed to the portlet via the `page_url` parameter on the portlet record. The portlet can extend or completely replace this behavior. If this link is rewritten as a URL that takes the user away from OracleAS Portal (it does not point to the OracleAS Portal middle tier server), then the portlet should set the `show_behaviour_style` field to `wwpro_api_provider.EXTERNAL_PORTLET` on the portlet record.

The following example illustrates how to code your `show` procedure to include Link mode:

```

procedure show
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
is
begin
    --
    -- Does the portal want us to render the portlet contents?
    --
    if (p_portlet_record.exec_mode = wwpro_api_provider.MODE_SHOW) then
        --
        -- Is this a mobile request?
        --
        if owa_util.get_cgi_env('HTTP_ACCEPT') like
            wwpro_login.CONTENT_TYPE_MOBILEXML || '%' then
            --
            -- This is a mobile request for the portlet contents,
            -- call the mobile show contents procedure
            --
            render_mobile_show_contents(p_portlet_record);
        else
            --
            -- This is a desktop request for the portlet contents,
            -- call the desktop show contents procedure
            --
            render_desktop_show_contents(p_portlet_record);
        end if;
    --
    -- Does the portal want us to render the LINK mode?
    --
    elsif (p_portlet_record.exec_mode = wwpro_api_provider.MODE_LINK) then
        --
        -- This is a mobile request for the portlet link mode,
        -- call the mobile link procedure
        --
        render_mobile_link(p_portlet_record);
    elsif -- check for other show modes, and handle them
        ...
end show;

```

The following example illustrates what you must implement in the `render_mobile_link` procedure for Link mode. In particular, notice the setting of the MIME type, the usage of `get_custom_short_title`, and the OracleAS Wireless XML output.

```

procedure render_mobile_link
(
    p_portlet_record in out wwpro_api_provider.portlet_runtime_record
)
is
    l_short_title varchar2(80);
begin
    --
    -- Set the MIME type to be Oracle9iAS Wireless XML
    --
    owa_util.mime_header('text/vnd.oracle.mobilexml');
    --
    -- Get the personalized short title for this portlet instance
    -- using the language and reference path held in the portlet
    -- record
    --
    l_short_title := get_custom_short_title(p_portlet_record);
    --
    -- Output the OracleAS Wireless XML markup
    --
    if l_short_title is not null then
        http.p('<SimpleHref target="'
            || htf.escape_sc(p_portlet_record.page_url)
            || '>'
            || l_short_title
            || '</SimpleHref>');
    else
        http.p('<SimpleHref target="'
            || htf.escape_sc(p_portlet_record.page_url)
            || '>'
            || get_custom_title(p_portlet_record)
            || '</SimpleHref>');
    end if;
end render_mobile_link;

```

8.12.1 Accessing the DeviceClass Header

To further facilitate the creation of mobile-enabled portlets, you can access information in the `DeviceClass` header, which is sent to all portlets, via `owa_util.get_cgi_env('x-oracle-device.class')`. You can use the values of this header to determine the complexity of the OracleAS Wireless XML rendition of the portlet. For example, the PDA rendition could contain considerably richer content than the microbrowser rendition. The voice rendition could contain extra tags for voice commands and links to sound files, which play instead of the text-to-speech system.

[Table 8-7](#) describes the values available in the header.

Table 8-7 *DeviceClass Header Values*

Value	Description
voice	Indicates a voice-only device, such as a normal telephone calling a voice access number.
microbrowser	Indicates a small size display device, which supports a markup browser, such as a WAP phone.

Table 8–7 (Cont.) DeviceClass Header Values

Value	Description
pdabrowser	Indicates a medium size display device, such as a Palm or PocketPC.
pcbrowser	Indicates a large size display device used with desktop browsers

8.13 Registering Providers Programmatically

In most cases, you use the OracleAS Portal user interface to register providers as described in [Section 8.2.3.2, "Registering the Database Provider"](#). In some instances, though, you may wish to register a provider programmatically rather than through the user interface. This section describes how to use `wwpro_api_provider_registry.register_provider` to register your providers:

- [Registration Prerequisites](#)
- [Provider Record Input](#)
- [Registration Example](#)

8.13.1 Registration Prerequisites

In order to register a provider programmatically with `wwpro_api_provider_registry.register_provider`, the following requirements must be met:

- You must first install the provider as described in [Section 8.2.3.1, "Installing the Packages in the Database"](#).
- You must have the necessary privileges to execute `wwpro_api_provider_registry.register_provider`. As it is a secure API, a security check determines whether the user calling it has the necessary privileges. At a minimum, you must have `wwsec_api.ANYPROVIDER_PUBLISH`. If you have the privileges to execute the API, you also have sufficient privileges to set the OracleAS Portal session via `wwctx_api.set_context`.

Note: If the database user of the SQL*Plus session is the OracleAS Portal schema owner, then, by default, the user is the OracleAS Portal schema owner (unless `wwctx_api.set_context` is called with a different user). The schema owner already has the necessary privileges to execute `wwpro_api_provider_registry.register_provider`.

8.13.2 Provider Record Input

The `wwpro_api_provider_registry.register_provider` API requires the `provider_record` as input. When you pass the `provider_record` to `register_provider`, all of the fields are not required. [Table 8–8](#) indicates which fields are required for Web and database providers. If a field is not applicable for a particular type of provider, it is shown as NA.

Table 8–8 Required provider_record Fields

Field	Required for database providers	Required for Web providers	Comments
name	Yes	Yes	None

Table 8–8 (Cont.) Required provider_record Fields

Field	Required for database providers	Required for Web providers	Comments
implementation_style	Yes	Yes	This field is always the following for PL/SQL portlets: wwpro_api_provider_registry.DATABASE_IMPL;
implementation_owner	NA	Yes	This field is the schema where the provider/portlet is located.
implementation_name	NA	Yes	When registering a database provider the implementation package of the provider must be valid for the registration to be successful.
login_frequency	Yes	Yes	This field specifies how often to grab the session information.
http_app_type	Yes	NA	For external application Web providers: wwpro_api_provider_registry.HTTP_APP_TYPE_EXTERNAL For regular Web providers: wwpro_api_provider_registry.HTTP_APP_TYPE_PORTAL
http_url	Yes	NA	None
require_url	Yes	NA	None
encryption_key	If provider_key is not null,yes. If provider_key is null, no.	If provider_key is not null,yes. If provider_key is null, no.	None

8.13.3 Registration Example

The following sample SQL script illustrates the usage of `wwpro_api_provider_registry.register_provider`.

```

set serveroutput on size 1000000
set define on
declare
    l_prov_rec    wwpro_api_provider_registry.provider_record;
    l_prov_id    integer;
begin
    l_prov_rec.name           := 'CacheProvider';
    l_prov_rec.display_name  := 'Cache Provider';
    l_prov_rec.timeout       := 10;
    l_prov_rec.timeout_msg   := 'The provider timed out';
    l_prov_rec.implementation_style := wwpro_api_provider_registry.DATABASE_IMPL;
    l_prov_rec.implementation_owner := '&&2';
    l_prov_rec.implementation_name := 'cache_provider';
    l_prov_rec.language      := wwctx_api.get_nls_language;
    l_prov_rec.enable_distribution := true;
    l_prov_rec.login_frequency := wwpro_api_provider_registry.LOGIN_
                                FREQUENCY_NEVER;

```

```
l_prov_rec.created_on      := sysdate;
l_prov_rec.created_by      := '&&1';
l_prov_rec.last_updated_on := sysdate;
l_prov_rec.last_updated_by := '&&1';
l_prov_id := wwpro_api_provider_registry.register_provider(l_prov_rec);
commit;
dbms_output.put_line('Cache Provider successfully registered');
exception
when others then
    dbms_output.put_line('ERROR: Could not register Cache Provider');
    dbms_output.put_line('SQLERRM: ' || SQLERRM);
    rollback;
end;
/
```

Note: After you have registered your provider, you may also refresh the Portlet Repository programmatically using `wwpro_api_provider_registry.refresh_portlet_repository` or through the OracleAS Portal user interface.

Part III

Appendixes

Part III contains the following appendixes:

- [Appendix A, "Creating Portlets with the Portlet Builder"](#)
- [Appendix B, "Troubleshooting Portlets and Providers"](#)
- [Appendix C, "Manually Packaging and Deploying PDK-Java Providers"](#)
- [Appendix D, "OracleAS Portal Provider Test Suite"](#)

Creating Portlets with the Portlet Builder

For developers who want quick solutions for building components, OracleAS Portal provides the Portlet Builder. The Portlet Builder wizards guide you step-by-step through the process of creating portlets. The wizards enable even the novice business developer to begin creating portlets right away.

After answering a few basic questions, you can decide whether to continue with the wizard or to create the portlet based on information already collected. A Finish button appears as soon as the wizard has collected enough information, allowing you to create the portlet without having to traverse all the wizard's pages. When you're ready for other users to run the portlet, you need only assign portlet access privileges, publish the portlet, and add it to a page.

This appendix describes the process of creating a portlet through a wizard and steps you through creating, editing, managing, and running different types of portlets. It contains the following sections:

- [Using a Wizard to Build a Portlet](#)
- [Editing a Portlet Builder Component](#)
- [Managing Portlets](#)
- [Managing Versions](#)
- [Managing Portlet Security](#)
- [Performing Test Runs on a Portlet](#)
- [Referencing the OracleAS Portal Schema](#)
- [Coding Additional Functionality](#)
- [Using Shared Components to Create a Look and Feel](#)
- [Example: Building Charts and Reports](#)

A.1 Using a Wizard to Build a Portlet

Portlets must be built under the ownership of a provider. This means that before you can build a portlet, you must first create a provider—or select an existing provider—to host (own or contain) the portlet. If you're creating a new provider, you may first want to create a schema against which to build the provider.

Although every portlet you create using OracleAS Portal requires that you build it under the ownership of a provider, it is not necessary that you build a provider each time you build a portlet. In fact, you can use an existing provider, or create one dedicated to the ownership of your locally built portlets, and then never have to create another provider again.

One provider can be used as a container that manages multiple portlets. A good rule is to use one provider per logical application, for example, a Human Resources application that consists of reports, forms, and charts.

This section steps you through the process of creating a schema, creating a provider, and building a portlet under the ownership of that provider in OracleAS Portal. It includes the following subsections:

- [Creating a Schema in OracleAS Portal](#)
- [Creating a Provider for Locally Built Portlets](#)
- [Creating Portlets Using OracleAS Portal Wizards](#)

A.1.1 Creating a Schema in OracleAS Portal

A schema is an Oracle database user account under the ownership of which you can store database objects, applications, and components and control the schema's database privileges. Use a Portal schema to enforce password access to the schema, to set aside tablespace specifically for your locally built portlets, and to identify the temporary tablespace the schema should use.

Creating a schema involves three main tasks:

- [Creating a Schema](#)
- [Granting and Revoking Privileges on Database Objects](#)
- [Enrolling the Schema in One or More Roles](#)

This section steps you through each of these tasks.

A.1.1.1 Creating a Schema

To create a schema in OracleAS Portal:

1. Log in to OracleAS Portal.
2. Click the **Navigator** link at the top of the page.
3. In the Navigator, click the **Database Objects** tab to bring it forward.
4. Click the **Schema** link next to **Create New...** (Figure A-1)

Figure A-1 The Schema Link on the Database Objects Tab in the Portal Navigator



5. On the Create Schema page (Figure A-2), enter a name to identify the schema in the **Schema** field.

The name must be unique within the portal. Blank and special characters are not allowed in the name. Type an underscore character to add a space in a name. For example, you can name a schema PORTLETS_SCHEMA, but not PORTLETS SCHEMA. Additionally, you cannot name a schema PORTLETS *SCHEMA nor PORTLETS%SCHEMA.

Figure A-2 The Create Schema Page

6. In the **Password** field, enter the password you will assign to the schema.
Asterisks appear for each character you enter. Users will enter this password when logging into the Oracle database as this schema.
7. Reenter the password in the **Confirm Password** field.
8. Select a default tablespace from the **Default Tablespace** list.
This will be used for storing any database objects created by the schema. We recommend that you select a tablespace created specifically for storing locally build portlet applications. If necessary, talk about this with your database administrator.
9. Select a temporary tablespace from the **Temporary Tablespace** list.
This will be used by the schema to create temporary storage for operations such as sorting table rows.
10. Select an Oracle resource profile for the new schema from the **ORACLE Profile** list.
The default profile is DEFAULT. Feel free to use this. If you plan to create a new profile, you must use Oracle SQL commands to do so. Refer to the Oracle database documentation for more information. You'll find this on the Oracle Technology Network at <http://www.oracle.com/technology/index.html>.
11. Select the **Use this Schema for Portal Users** check box to add the schema you are creating to the list of database schemas to which portal users can map for administrative purposes.
Every OracleAS Portal user must be associated with a database schema. By default, the name of this schema is `<portal>_public`, where `<portal>` is the name of the schema in which OracleAS Portal is installed. If you select this check box, a portal user can be mapped instead to the schema you are creating here.
12. Click **Create** to save your changes and return to the Portal Navigator.
Alternatively, click the link to your new schema that now appears at the top of the page to begin editing the new schema's properties. See [Section A.1.1.2, "Granting and Revoking Privileges on Database Objects"](#) and [Section A.1.1.3, "Enrolling the Schema in One or More Roles"](#) for more information.

A.1.1.2 Granting and Revoking Privileges on Database Objects

You may need to increase or limit the access your users will have on some database objects associated with this schema. Once they are able to log in to this schema, users' access privileges are influenced by the roles of which this schema is a member (see [Section A.1.1.3, "Enrolling the Schema in One or More Roles"](#)). You can use grants to select specific database objects and specify which of those access privileges should be further limited or increased.

For example, imagine that you have a BASIC_USER role. This role allows users to SELECT from all tables in the database. You may want to restrict selections on some tables. You can use grants to select one or more database objects (such as specific tables, views, and the like) and remove the SELECT privilege. Conversely, if a role does not include all the access privileges you want a schema to have on one or more database objects, you can use grants to increase access privileges.

Note: By default, OracleAS Portal allows only SELECT on database objects. Other privileges must be granted explicitly.

This section describes how to further control privileges on objects associated with your schema.

Note: If you have arrived at this task by clicking a link to edit the schema that appeared at the top of the Create Schema page, skip to step 5.

To grant privileges to database objects associated with a schema:

1. Log in to OracleAS Portal.
2. Click the **Navigator** link at the top of the page.
3. Click the **Database Objects** tab to bring it forward.
4. On the Database Objects tab ([Figure A-3](#)), go to the **Name** column to locate the schema you will work with, and click the **Edit** link that is next to it.

Figure A-3 The Edit Link Next to a Schema in the Portal Navigator

Oracle Application Server Portal Navigator

Home Builder Personalize Acc

Page Groups Providers Database Objects

Here are the schemas and associated actions available to you. Find Go

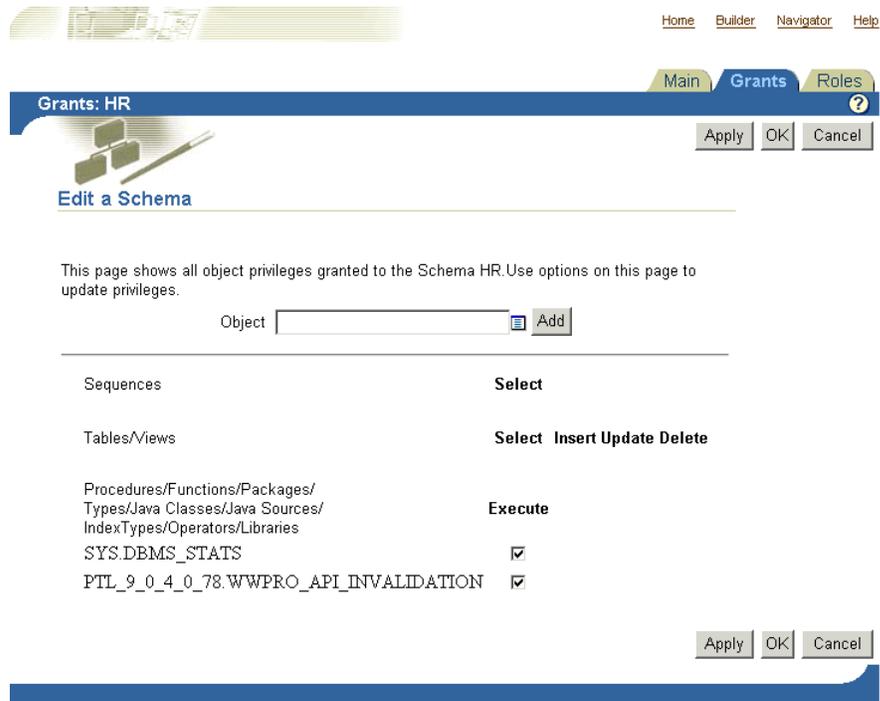
Create New... [Schema](#)

Path: Database Schemas Previous Page 1 Next

Type ▲▼	Name ▲▼	Actions	Creator ▲▼	Last Modified ▲▼ ?
Schema	ANONYMOUS	Edit , Drop , Grant Access	ANONYMOUS	15-AUG-2003 02:26 PM
Schema	CTXSYS	Edit , Drop , Grant Access	CTXSYS	15-AUG-2003 02:26 PM
Schema	DBSNMP	Edit , Drop , Grant Access	DBSNMP	15-AUG-2003 02:05 PM
Schema	HR	Edit , Drop , Grant Access	HR	15-AUG-2003 02:29 PM
Schema	MDSYS	Edit , Drop , Grant Access	MDSYS	15-AUG-2003 02:20 PM

5. On the resulting page, click the **Grants** tab ([Figure A-4](#)).

Figure A-4 The Grants Tab



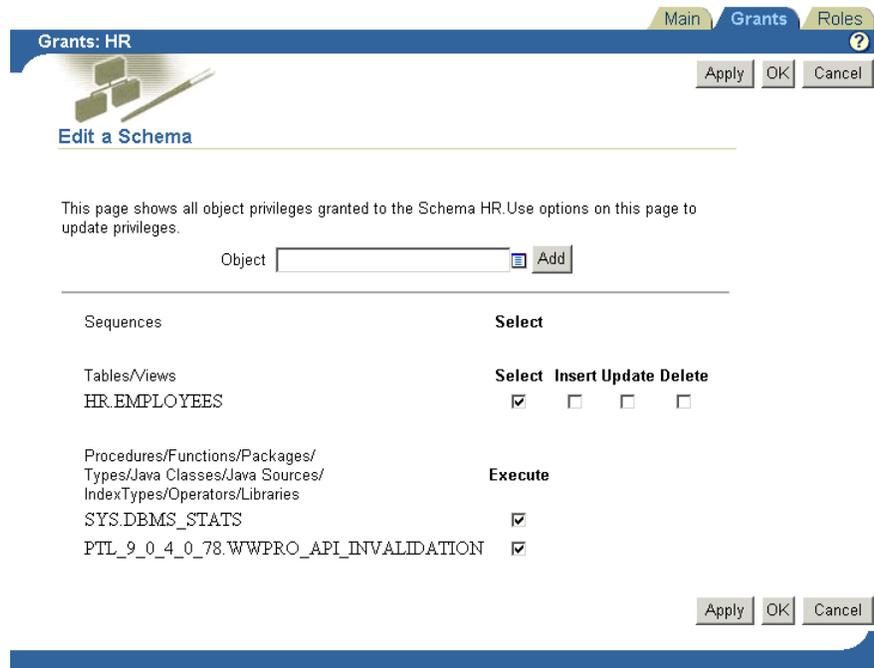
6. In the **Object** field, enter the name of a database object on which you want to control privileges.

Click the Browse icon to select from a list of objects. Prefix the name of the object with the schema that owns it. For example, add SCOTT to EMP (SCOTT.EMP) to indicate the EMP table in the SCOTT schema.

7. Click **Add** to add the object to the list at the bottom of the page.

Objects are grouped by object type. That is, tables are listed with tables, views with views, and so on.

8. Select or clear check boxes next to the object to increase or limit the access privileges on the object.

Figure A–5 The Check Boxes Next to a Table Object

9. Click **Apply** to save your changes, or click **OK** to save your changes and return to the Portal Navigator.

A.1.1.3 Enrolling the Schema in One or More Roles

You will want to enroll your schema in one or more roles to provide the desired level of overall database access privileges. If you think of a schema as a super-user, created from a population of users who have password access to the schema, you enroll a schema in one or more roles to provide access privileges to the database to all users who in turn have login access to the schema.

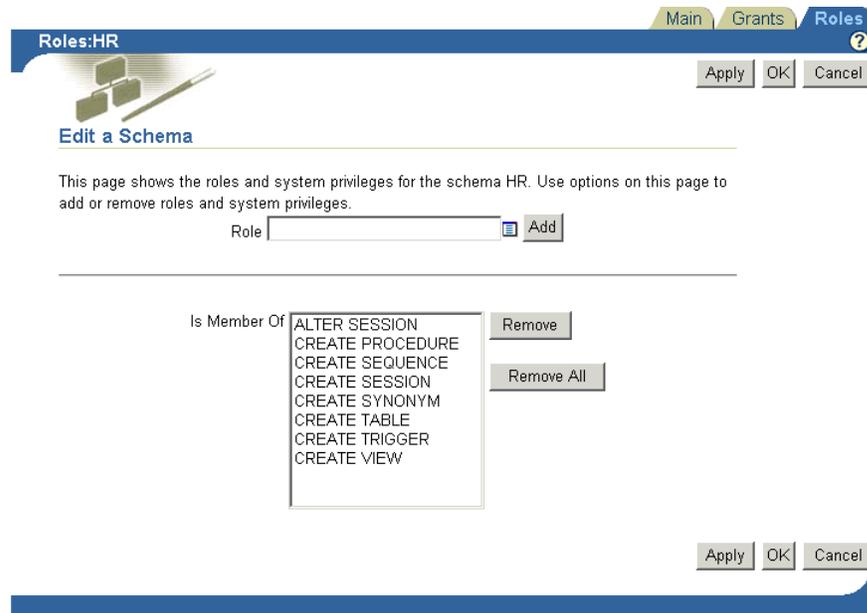
The access privileges provided through the schema's membership in one or more roles can be overridden on specific database objects through grants (see "[Granting and Revoking Privileges on Database Objects](#)").

Note: If you have arrived at this task by clicking a link to edit the schema that appeared at the top of the Create Schema page or if you are continuing from editing the schema's **Main** or **Grants** tab, skip to step 5.

To enroll a schema in one or more roles:

1. Log in to OracleAS Portal.
2. Click the **Navigator** link at the top of the page.
3. Click the **Database Objects** tab to bring it forward.
4. On the Database Objects tab, go to the **Name** column to locate the schema you will work with and click the **Edit** link that is next to it.
5. On the resulting page, click the **Roles** tab to bring it forward.

Figure A-6 The Roles Tab



By default, the schema is enrolled in the CONNECT role, and may be enrolled in others.

6. Click the Browse icon next to the **Role** field.
7. Select a role to which you will enroll the schema.
8. Click the **Add** button next to the **Role** field to add the selected role to the **Is Member Of** list.

Continue selecting roles and clicking the **Add** button until you have enrolled the schema in all desired roles.

9. Click **Apply** to save your changes, or click **OK** to save your changes and return to the Portal Navigator.

A.1.2 Creating a Provider for Locally Built Portlets

Once you have created or identified an existing schema that will own your provider, you are ready to create a provider to host (own or contain) your locally built portlets.

To create a provider for locally build portlets:

1. Log in to OracleAS Portal.
2. Click the **Navigator** link at the top of the page.
3. In the Portal Navigator, click the **Providers** tab to bring it forward.
4. On the Providers tab, click the **Locally Built Providers** link.
5. On the resulting page, click the **Database Provider** link next to **Create New...**

Note: If you do not see the **Create New** link on the Locally Built Providers page, this means that the user name you used to log in does not have privileges in any schema. The capability to create a new provider is available only when the current user has some privilege in a database schema. In this case, you must have the Portal Administrator edit your user profile to grant you the privilege to create a schema. To do this:

1. Go to the **Portal User Profile** portlet on the **Administer** tab of the Portal Builder page.
2. Enter the user name and click **Edit**.
3. On the **Edit Portal User Profile** page, click the **Privileges** tab to bring it forward.
4. Under Administration Privileges, set **All Schemas** to **Create**.
5. Under All Portal DB Providers, set **Create**.

When these steps are complete, you can log in again with your user name and create a schema on the **Database Objects** tab in the Portal Navigator. Once you have created a schema, you will see the **Create New** link on the Locally Built Providers page.

6. In the **Portal DB Provider Name** field, enter an internal name to identify this provider to the portal.

Blank characters and special characters are not allowed. Type an underscore character to add a space, for example, `portlet_provider`.

7. In the **Portal DB Provider Display Name** field, enter a display name to identify this provider to users.
8. Select a schema, for example, the one you just created, from the **Portal DB Provider Schema** drop-down list.

This list of schemas includes only those on which you have the **Manage** privilege.

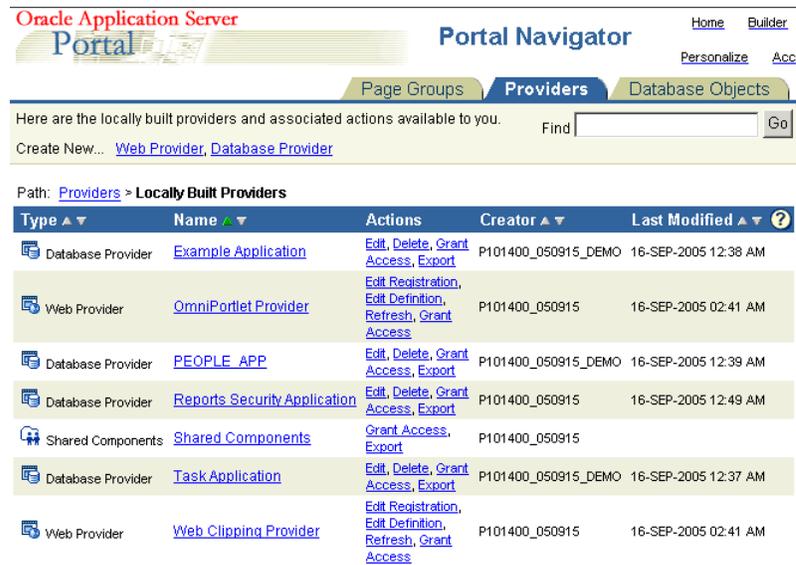
9. Click **OK** to save your changes and return to the Portal Navigator.

A.1.3 Exposing a Provider

Before you can create and publish portlets under the auspices of a provider, you must ensure that the provider has been identified as a provider to OracleAS Portal. To expose a provider:

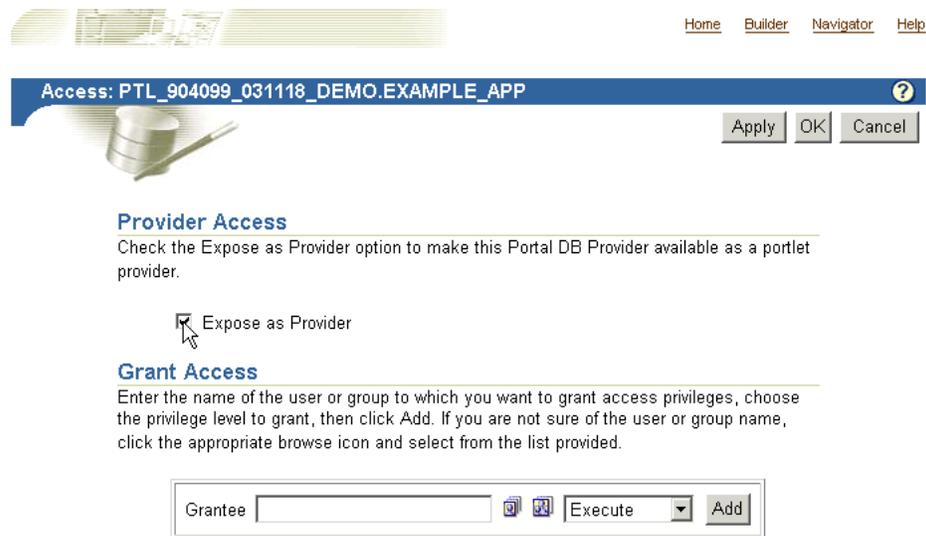
1. Create a provider, for example, as described in [Section A.1.2, "Creating a Provider for Locally Built Portlets"](#).
2. Locate the listing for your new provider in the Portal Navigator.
3. Click the **Grant Access** link next to your new provider ([Figure A-7](#)).

Figure A-7 The Grant Access Link Next to a Provider in the Portal Navigator



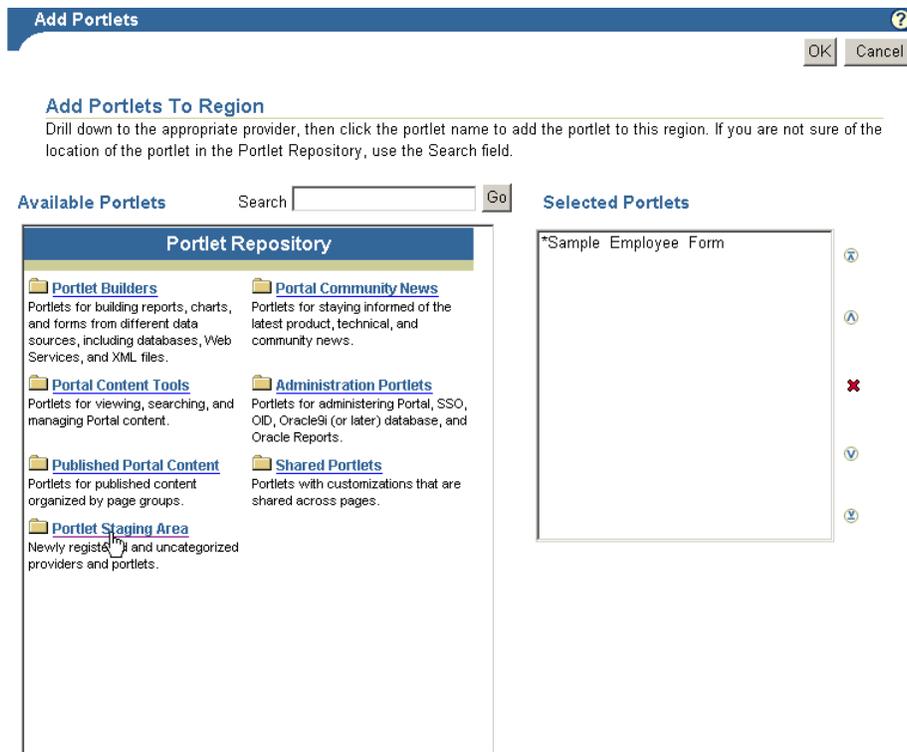
- On the Grant Access page, verify that **Expose as Provider** is selected.

Figure A-8 The Expose as Provider Check Box on the Provider Grant Access Page



- Click **OK** to save your change and exit the Grant Access page.

Selecting this check box enables users to publish portlets to the portlet repository under the auspices of this provider. Provided you have selected this box, the portlets you create using the Portlet Builder will be published to the portlet repository automatically (under the **Portlet Staging Area** node) when you finish them.

Figure A–9 The Portlet Staging Area Node in the Portlet Repository

A.1.4 Creating Portlets Using OracleAS Portal Wizards

This section lists and describes the types of portlets you can build using the portlet-building wizards available in OracleAS Portal. It provides general information on how to build a portlet and specific information on how to build forms, reports, charts, and lists of values.

Beginning with OracleAS Portal 10g (9.0.4), you can define portlets "in place" on a page. In other words, you can add a portlet to a page and define the complete portlet using the Portlet Builder without leaving the page. To add and create portlets in this way, you must have the required privileges: you must belong to the `PORTAL_ADMINISTRATORS` group and have the `MANAGE CONTENT` privilege on the page. This section describes how to define portlets outside of the page; then, you can modify and manage portlets independently, and later add the portlet to the page, as described in [Section A.6.4, "Running the Component as a Portlet through the Portlet Personalization Form"](#).

Note: If you are planning to build portlets in an OracleAS Portal database provider and accept the defaults in the wizards, you must ensure that the appropriate privileges have been granted on the objects of the `SCOTT` schema to the Portal database provider schema. Otherwise, you will receive errors when going through the wizards.

This section contains the following subsections:

- [Building Portlets Declaratively](#)
- [Building Forms Declaratively](#)
- [Building Reports Declaratively](#)

- [Building Forms and Reports against interMedia Rich Content](#)
- [Building Charts Declaratively](#)
- [Building Lists of Values Declaratively](#)

You can build additional types of portlets through the portlet-building wizards. [Table A-1](#) lists and describes the types of portlets you can build.

Table A-1 *Types of Portlets Available Through Portlet-Building Wizards*

Portlet Type	Description
Form	<p>Displays a personalized form that can be used as an interface for updating tables, executing stored procedures, and generating other personalized forms.</p> <p>Through the OracleAS Portal portlet-building wizards, you can build three types of forms.</p> <ul style="list-style-type: none"> ■ A form based on a table or view enables users to insert, update, and delete data in a database table or view. ■ A master-detail form displays a master row and multiple detail rows within a single HTML page. The form contains fields for updating values in two database tables or views. ■ A form based on a procedure enables users to insert, update, and delete data over a database stored procedure.
Report	<p>Displays the data that you select from a database table or view in report format. The report can have tabular, form, or custom layout. You can build three types of reports:</p> <ul style="list-style-type: none"> ■ Query By Example (QBE) Report allows users to query, insert, update and delete data in tables and views. In the QBE report build wizard, you choose which data to display in the report. Or, you can allow end users to make their own queries in the QBE report's personalization form. ■ Reports from Query Wizard guides you through building a report using a wizard to construct your SELECT statement. ■ Reports from SQL Query builds a report from your manually-constructed SQL query.
Chart	Displays data that you select from a database table or view as a bar chart.
Calendar	Displays the data that you select from a database table or view in calendar format.
Dynamic Page	Displays dynamically-generated HTML content on a Web page.
XML Component	Displays an XML page.
Hierarchy	Displays the data that you select from a database table or view as a graphical hierarchy of items containing up to three levels.
Menu	Displays an HTML-based menu that contains options that are linked to other menus, OracleAS Portal database portlets, or URLs.
URL	Renders the content of a URL target in a portlet.
Frame Driver	Displays a Web page with two frames. The queries entered in one frame control the content of the other.
Link	Displays a link that provides a hypertext jump between OracleAS Portal database portlets and other database portlets, database portlet personalization forms, or any HTML page.

Table A-1 (Cont.) Types of Portlets Available Through Portlet-Building Wizards

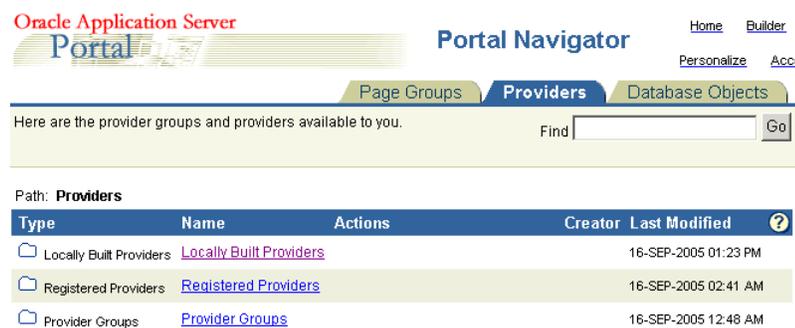
Portlet Type	Description
List of Values	Use LOVs when creating database portlets to preselect the possible values in an entry field. Users select a value from the list rather than enter it manually. You can build LOVs based on other LOVs.
Data Component	Displays data in a spreadsheet format.

A.1.4.1 Building Portlets Declaratively

Note: To build a portlet, you must have at least the Edit privilege on the provider that will own the portlet. For more information, see ["Creating a Provider for Locally Built Portlets"](#).

To use a wizard to build a portlet:

1. Log in to OracleAS Portal.
2. Click the **Navigator** link at the top of the page.
3. Click the **Providers** tab to bring it forward.
4. Click the **Locally Built Providers** link.

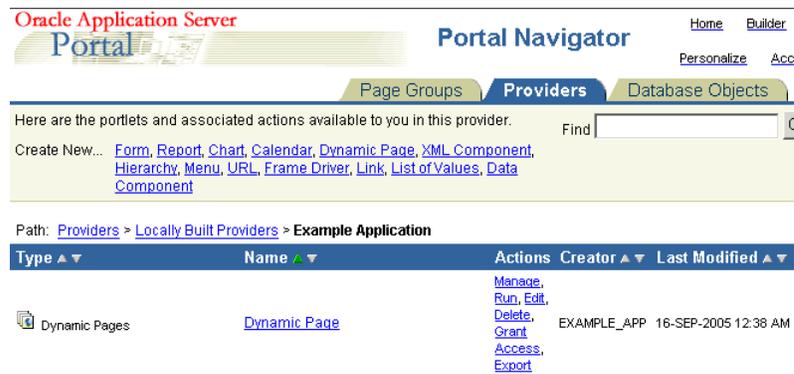
Figure A-10 The Locally Built Providers Link in the Portal Navigator

5. Click the name of the OracleAS Portal database provider you want to host the new portlet.

The **Name** column displays the names of all the providers on which you have privileges.

6. Next to **Create New...**, click the link for the type of portlet that you want to build, for example, **Chart** or **Form** (Figure A-11).

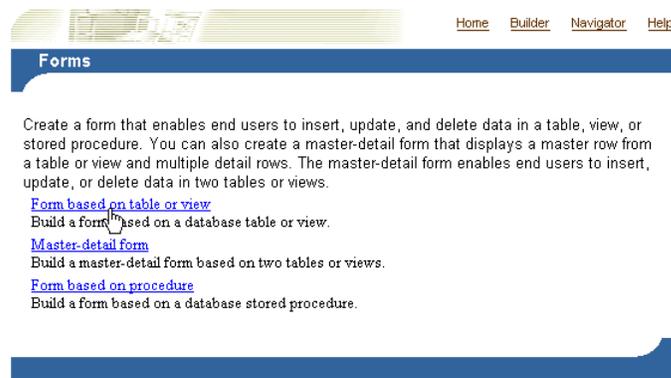
Figure A-11 The Form Link Next to Create New in the Portal Navigator



See [Table A-1](#) for a list and description of the types of portlets you can build.

Depending on the type of portlet you are building, OracleAS Portal displays either the first step of the portlet build wizard or a menu of additional choices. If you click **Form**, for example, you have the option of creating a form based on a table or view, a master-detail form, or a form based on a procedure ([Figure A-12](#)).

Figure A-12 Choices Available for Creating a Form in the Portlet Builder



7. When the first step of the portlet build wizard displays, follow the instructions shown on each step.

A progress indicator displays how many wizard steps are left to complete. The **Finish** button becomes available when you have provided the wizard with sufficient information to build the portlet. The fields you don't complete will populate with default values or will remain null.

If you are unsure of how to complete the fields on a particular step of the wizard, click the online Help icon in OracleAS Portal for more information.

The next sections guide you through the specific steps required to build a particular type of portlet. For more information, see:

- [Building Forms Declaratively](#)
- [Building Reports Declaratively](#)
- [Building Forms and Reports against interMedia Rich Content](#)
- [Building Charts Declaratively](#)
- [Building Lists of Values Declaratively](#)

A.1.4.2 Building Forms Declaratively

Forms provide a means of inserting, updating, and deleting content from your database through a user-friendly interface. You control form layout through options available in the Forms build wizard. Wizard options enable you to control the look and feel of the overall form as well as the form's individual entry fields and buttons.

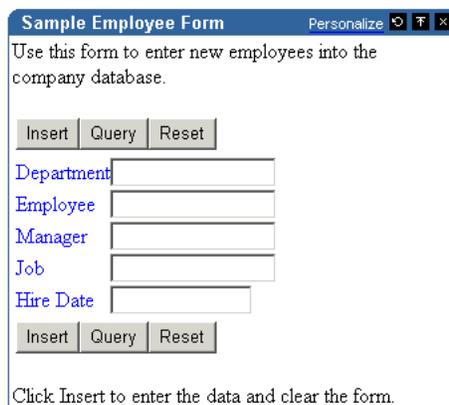
You can perform JavaScript validation on user-specified values entered in any text field on the form. Additionally, you can add PL/SQL event handlers that run when a user clicks a button on the form. After successful submission of form content, you can specify a PL/SQL block or procedure that will execute.

The portlet-building wizards in OracleAS Portal provide three construction methods for building forms:

- Forms based on tables or views
- Master-detail forms
- Forms based on a procedure

All of these forms are described in [Table A-1](#). This section describes how to create a form based on a table or view ([Figure A-13](#)).

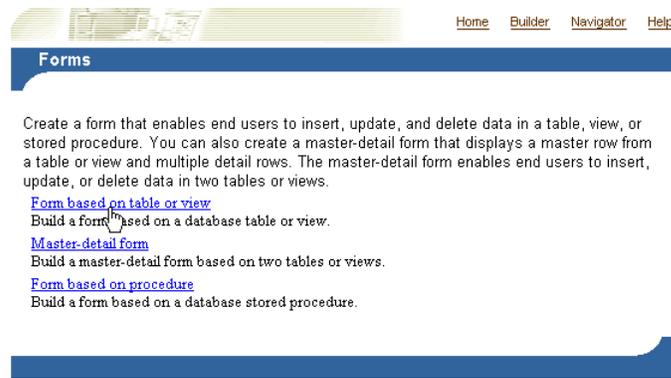
Figure A-13 Sample Form Based on a Table



To create a form based on a table or view:

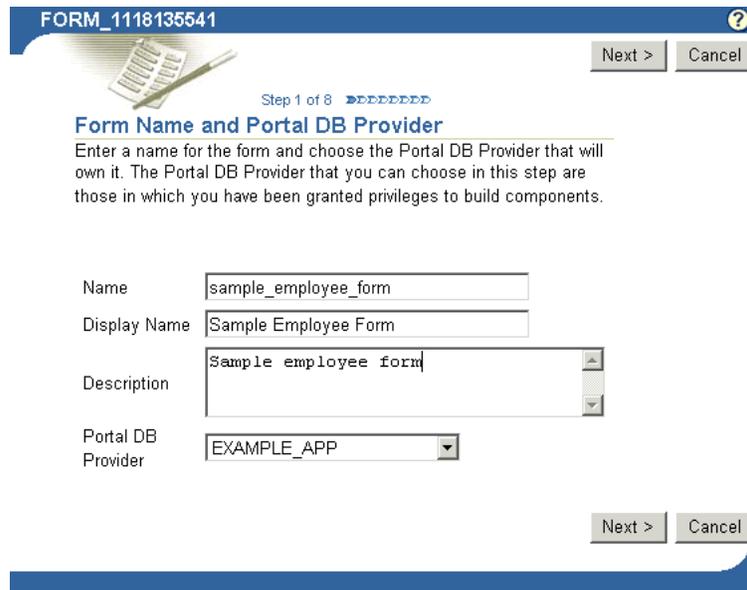
1. Follow the instructions detailed in "[Building Portlets Declaratively](#)".
Return to this section once you complete step 6.
2. On the Forms page, click **Form based on table or view**.

Figure A-14 The Form Based on Table or View Link in the Portlet Builder



3. In the **Name** field, enter an internal name for the form (Figure A-15).

Figure A-15 Step One of the Form Wizard



The internal name is not published to users.

4. In the **Display Name** field, enter the name by which users will identify this form (Figure A-15).

The display name is used at runtime. It displays as the title of the browser window as well as in the banner of the form. When the form is published as a portlet, the display name is used as the title of the portlet and in the List of Available Portlets in the Portlet Repository.

5. In the **Description** field, enter a description of this form (Figure A-15).

The description displays below the portlet in the Portlet Repository. It can be a summary of the portlet's purpose, a classification of its type, or any other descriptive information. It may be useful within your organization to have a standard approach to what is included in the description.

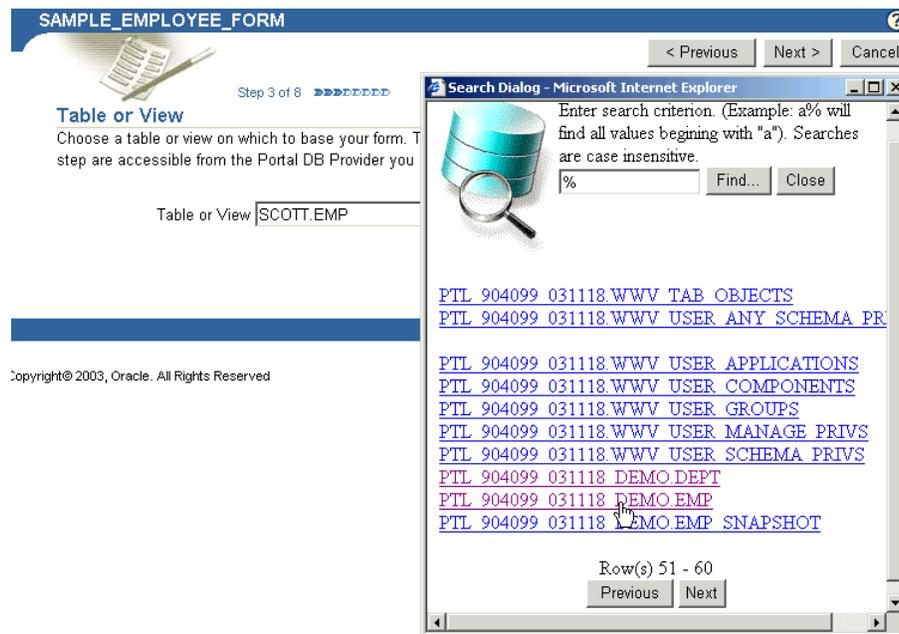
6. From the list of **Portal DB Providers**, select the provider that will own this form (Figure A-15).

We recommend that you use a provider specifically created for owning, or hosting, your declaratively-built portlets. This list displays only those providers in which you have been granted privileges to build portlets.

7. Click **Next**.
8. Click the Browse icon next to the **Table or View** field, and choose a table or view on which to base your form (Figure A-16).

You can use a constant in this field (for example, #APP_SCHEMA#.EMP, #PORTAL_SCHEMA#.DEPT) in lieu of a fixed value. For more information, see "Referencing the OracleAS Portal Schema".

Figure A-16 Selecting a Table or View



The tables and views that you can choose in this step are those that are accessible from the Portal DB Provider you selected in the previous step. You can also enter the table name directly into the field.

Note: If you are using the Example Application (based on the PORTAL_DEMO schema) to build a form, the default table on which to base the form is SCOTT.EMP. As the SCOTT table does not have PUBLIC EXEC privileges, the administrator must manually grant public access to the SCOTT schema to create a form based on the default table. If this is not done, and you choose the default table, the following error is generated:

```
Error: This table does not exist or you do not
have the require privileges (WWV-13020).
```

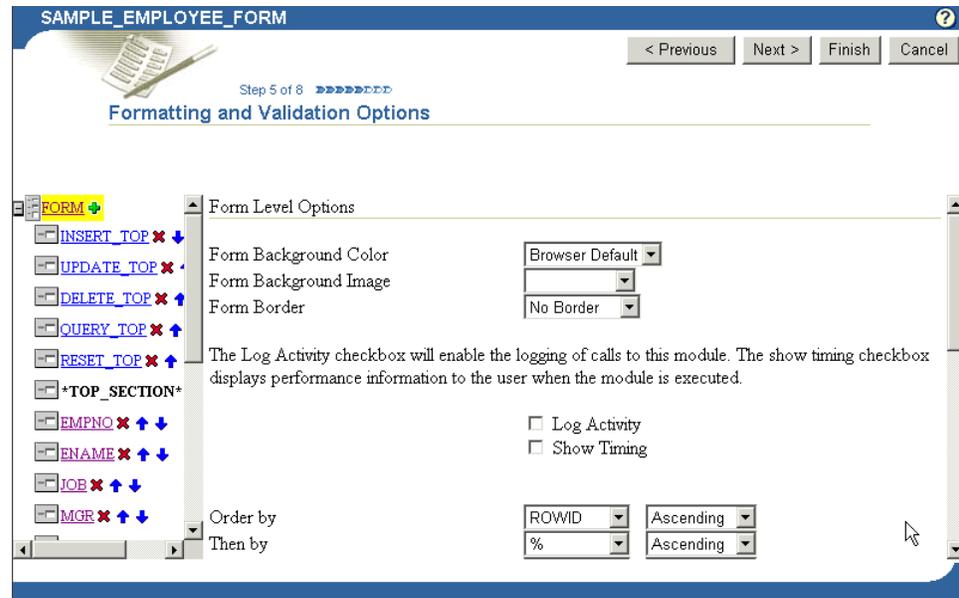
9. Click **Next**.
10. Select a form layout.

Choose between **Tabular** or **Custom**. Tabular layouts are created automatically. Custom layouts are based on HTML code that you supply in a later step.

11. Click Next.

12. Set Formatting and Validation Options (Figure A-17):

Figure A-17 Form Formatting and Validation Options



- a. Click **Form** in the left column to set up the formatting and validation options for the entire form (Figure A-17).

The formatting and validation options that appear in the right column relate to the object you have selected in the left column.

Table A-2 lists and describes form-level formatting and validation options.

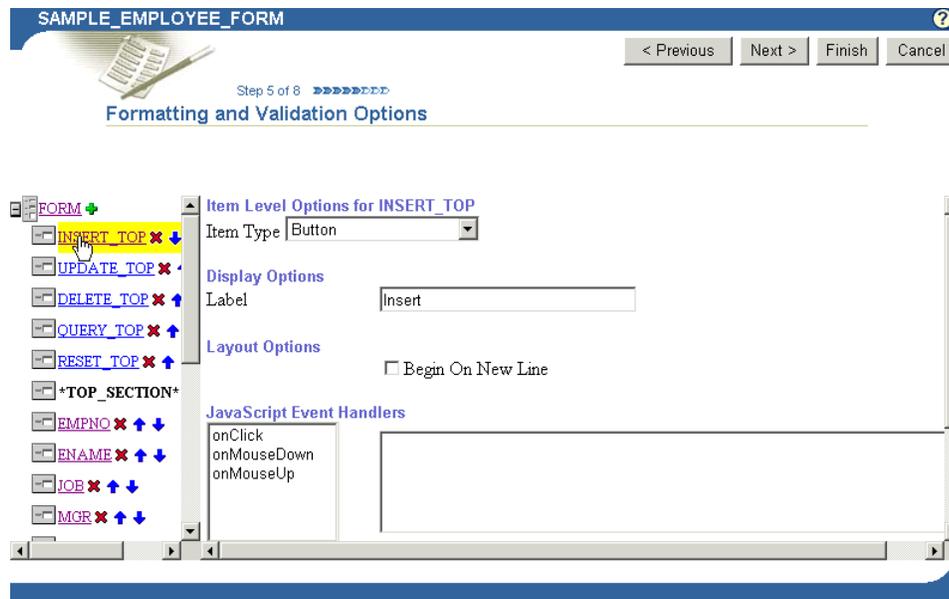
Table A-2 Form-Level Formatting and Validation Options

Option	Description
Form Background Color	Choose the background color of the form.
Form Background Image	Choose an image that will appear in the background of the form.
Form Border	Choose a style for the border around the form background.
Log Activity Check Box	Select to record activity in the OracleAS Portal log. Log information includes performance statistics as well as the names of users who request the form.
Show Timing Check Box	Select to display the time elapsed, starting from when the server receives the request to generate HTML for the form. Timing displays at the bottom of the form.
Order by	Choose the column by which you will order the data returned by the SELECT statement. Select the percent sign (%) if you do not wish to specify a column for ordering.
Then by	Choose the column(s) for subsequent ordering of the data returned by the SELECT statement. Select the percent sign (%) if you do not wish to specify a column for ordering.
Ascending	Choose Ascending (from a to z/0 to 9) or Descending (from z to a/9 to 0), depending on how you want the column values ordered.

Table A-2 (Cont.) Form-Level Formatting and Validation Options

Option	Description
On Successful Submission of a Form Execute this PL/SQL	Enter optional PL/SQL code that will execute after a user clicks a button on the form. The button must cause an operation, such as INSERT, to be performed on the table or view on which the form is based. For example, you might enter code that causes a message to display to the user when a table row is successfully updated.

- b. Select a TOP_SECTION item in the left column (that is, INSERT_TOP, UPDATE_TOP, and the like) to set formatting and validation options in the right column for INSERT, UPDATE, and other like items that will display at the top of the form (Figure A-18).

Figure A-18 Button Formatting and Validation Options

By default, insert, update, delete, query, and reset buttons appear at the top and bottom of each form. To prevent these buttons from displaying, click the Delete icon that appears next to the item in the left column.

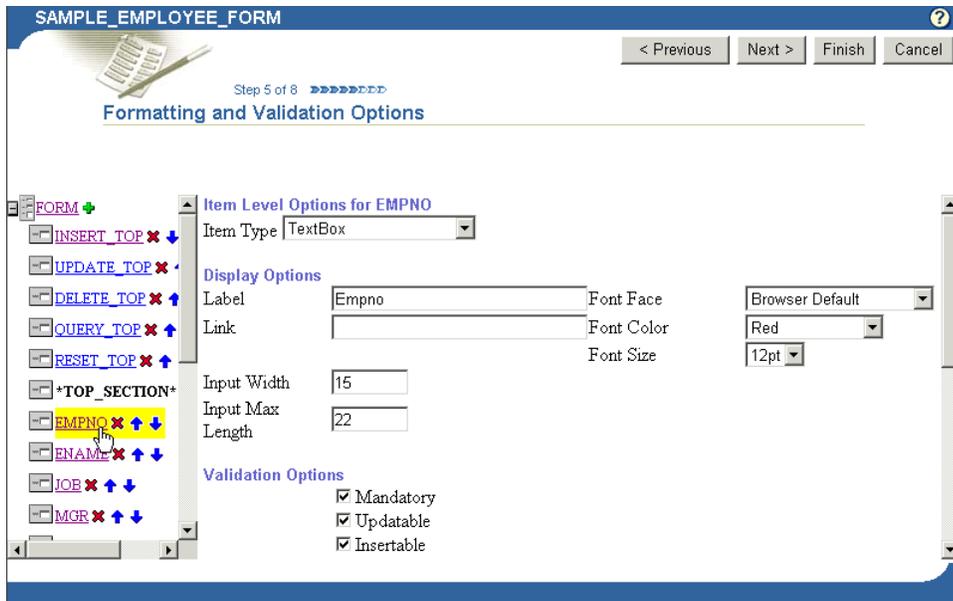
Table A-3 lists and describes the formatting and validation options for buttons.

Table A-3 Formatting and Validation Options for Buttons

Option	Description
Item Type	<p>Select the method for displaying the selected item type on your form. Note that the default for items, such as <code>INSERT_TOP</code>, is <i>button</i>. For <code>INSERT</code>, <code>UPDATE</code>, <code>DELETE</code>, <code>QUERY</code>, and <code>RESET</code>, you will likely most often want to use the default. If you choose another item type, you will need to add code to invoke the item's functionality (for example, an insert) through a JavaScript or PL/SQL Event Handler. Item types include:</p> <ul style="list-style-type: none">▪ Blank: Inserts a line break in between fields.▪ Button: Inserts a button. <code>INSERT</code>, <code>UPDATE</code>, <code>DELETE</code>, <code>QUERY</code>, and <code>RESET</code> items require the selection of an event handler further down on this page.▪ CheckBox: For <code>INSERT</code>, <code>UPDATE</code>, and so on, you must write a JavaScript handler for this to be meaningful. For columns, the underlying column must be at least <code>varchar2(5)</code> to accommodate entries of <code>TRUE</code> (selected) and <code>FALSE</code> (cleared).▪ ComboBox: Inserts a pop-list of values with an extra blank space that allows for manual entry of a value. You must already have defined a list of values to make this selection. You can enter a constant in the Default Value field, and define the default value as a constant in the Default Value Type field. For more information about the constants you can use, see "Referencing the OracleAS Portal Schema".▪ File Upload (Binary): Used to insert a BLOB column.▪ File Upload (interMedia): Select this type for interMedia rich content, such as images, audio clips, and video clips. The table must have columns of the type <code>ORDIMAGE</code>, <code>ORDAUDIO</code>, or <code>ORDVIDEO</code>. For more information, see "Building Forms and Reports against interMedia Rich Content".▪ Hidden: Creates a hidden form field.▪ Horizontal Rule: Draws a horizontal line, similar to <code><hr></code>.▪ Image: Used to show an image.▪ Label Only: This shows only a prompt.▪ Password: This will have the behavior of a password field, where input will be hidden.▪ TextArea: Provides a large text area for the entry of multiple lines of text.▪ TextBox: Provides a text box.
Display Options	Label : Enter text that will display next to the button.
Layout Options	<p>This section displays only if you selected Tabular in the Form Layout step. If you selected Custom, you can specify your own sophisticated layout in the next step using HTML code.</p> <p>Begin on New Line: Select this option to display the item on a new line on the form. Leaving this cleared will display the item on the same line as the previous item or column field.</p>
JavaScript Event Handlers	Choose an event and enter the JavaScript for the action you want to occur when that event happens. Refer to your JavaScript documentation for descriptions of the events on this list.
PL/SQL Button Event Handler	Choose a button event and enter the PL/SQL code for the action you want to occur when the event happens. For advanced personalization, choose Custom from the drop-down list, and enter the PL/SQL code for the custom event.

- c. Select a column name in the left column to set formatting and validation options in the right column for table or view columns that will display in the form (Figure A-19).

Figure A-19 Column Formatting and Validation Options



To prevent the display of a column, click the **Delete** icon next to it.

Table A-4 lists and describes the formatting and validation options available for table or view columns.

Table A-4 Formatting and Validation Options for Table or View Columns

Option	Description
Item Type	Defines how the column you've selected on the left will display on your form. Options are listed and described in Table A-3.

Table A–4 (Cont.) Formatting and Validation Options for Table or View Columns

Option	Description
Display Options	<p data-bbox="748 260 1409 394">Label: Enter text to label this column on the form. Text will be display-only and will appear next to the field that represents this table or view column on the form. For example, you can add a label next to the field for the EMPNO column called Employee Identification Number.</p> <p data-bbox="748 405 1409 569">Link: Specify a link to another OracleAS Portal portlet or URL. If you specify this option, the Label appears on the form as a hypertext link. If you want to link the form to another URL, type the URL location in the Link text box. If you want to link to an OracleAS Portal portlet, you can type the name of the package containing the portlet, for example:</p> <pre data-bbox="748 579 1019 606">SCHEMA.portlet.SHOW</pre> <p data-bbox="748 617 1409 726">SCHEMA is the name of the schema that owns the portlet; portlet is the portlet name; and SHOW is the procedure used to display the portlet. You can also specify SHOW_PARMS to display the personalization form for the portlet.</p> <p data-bbox="748 737 1409 816">Font Face, Color, Size: Specify the font characteristics for displaying text associated with the selected column on the form.</p> <p data-bbox="748 827 1409 886">Input Width: Enter the character width of the field associated with the selected column.</p> <p data-bbox="748 896 1409 976">Input Max Length: Enter the maximum length of the data that can be entered into the form field associated with the selected column.</p>

Table A–4 (Cont.) Formatting and Validation Options for Table or View Columns

Option	Description
Validation Options	<p>Mandatory: Select to require that the user specify a value in the field associated with the selected column before submitting the form.</p> <p>Updatable: Select to enable the user to update the column. Leaving this blank prevents updates. This feature is useful when you want to allow users to update some table columns in the form, but only view others. For example, by clearing Updatable for employee names and ID numbers, and selecting Updatable for the employee's department, you can create a form that enables users to update an employee's department (for example, when the employee is transferred), but disables users from updating the employee name and ID number. When users display views, updatable columns display in black, non-updatable columns display in blue, and mandatory columns display in red.</p> <p>Insertable: Select to store the value of the column in the database when the user creates a new record. Leaving this blank prevents the value from being stored in the database (that is, it removes the column from the <code>INSERT</code> statement).</p> <p>Default Value: Enter a default value for the field associated with the selected column. Users can accept this value or specify their own. Specify a constant, function, expression, or SQL query.</p> <p>Default Value Type: Specify a type for the default value entered in the previous field (Default Value).</p> <p>Format Mask: Enter an Oracle display format for columns containing numeric and date data types. For example, you could enter <code>DD/MM/YYYY</code> to display dates according to this pattern; or you could enter <code>999,999,999.99</code> to place commas and decimals according to this pattern.</p> <p>Note: Refer to the Oracle database documentation (http://www.oracle.com/technology/index.html) for information about date and numeric formatting options.</p> <p>Field Level Validation: Choose a JavaScript validation routine that verifies whether the user enters a valid value in the field. For example, you could choose a JavaScript routine called <code>IsNumber</code> that verifies that a number has been typed in a <code>SALARY</code> field. Field validation providers are implemented in JavaScript and run when the <code>OnChange</code> condition occurs; for example, when the user presses the Return key after entering a value in the field.</p> <p>Form Level Validation: Choose a JavaScript validation provider that verifies whether the user enters a valid value in the field. Form validation providers run when the user submits the information, for example, after the user clicks the Insert button on the form.</p>

Table A-4 (Cont.) Formatting and Validation Options for Table or View Columns

Option	Description
Layout Options	<p>This section displays only if you selected Tabular in the Form Layout step. If you selected Custom, you can specify your own sophisticated layout in the next step using HTML code.</p> <p>Begin on New Line: Select to create a line break before the field associated with the selected column. Leaving this cleared will display the column field on the same line as the previous column field.</p> <p>Row Span: Enter the number of HTML cells that can be used to display the field vertically on the browser page.</p> <p>Col Span: Enter the number of HTML cells that can be used to display the field horizontally on the browser page.</p>
JavaScript Event Handlers	<p>Choose an event and enter the JavaScript for the action you want to occur when the event takes place.</p> <p>Refer to your JavaScript documentation for descriptions of the events in the list.</p>

- d. Select a `BOTTOM_SECTION` item in the left column (that is, `PREVIOUS`, `NEXT`, `INSERT_BOTTOM`, `UPDATE_BOTTOM`, and the like) to set formatting and validation options in the right column for `PREVIOUS`, `NEXT`, `INSERT`, `UPDATE`, and other like items that will display at the bottom of the form.

See step **b** of this task for more information.

13. Click **Next**.

14. If you selected a **Custom** layout:

Enter the HTML code that will control the layout of your form. The text boxes on this page contain sample HTML code that creates a table. Using this model, each column you selected in the Tables or Views step of this wizard is formatted to display in a table row on the form.

Column *labels* are specified by the suffix `. LABEL` in the sample code. Column *values* are specified by the suffix `. ITEM` in the sample code.

You can update the sample code with any HTML of your own, provided you do not change the column values (`. ITEM` suffix) or labels (`. LABEL` suffix). You can, however, delete column values from this code.

If you selected a **Tabular** layout:

Enter descriptive text that you want to appear on the top or bottom of the form (Figure A-20). You can add a form title and help text for the form. You can also choose a template that controls the look and feel of the page on which the form appears.

Figure A–20 Entering Header, Footer, and Other Text for a Form

Table A–5 lists and describes the options available on this page.

Table A–5 Form Text Options on Tabular Format Forms

Option	Description
Template	Choose a template to set the look and feel of form elements such as background colors and images and the image that appears in the upper left corner of the page. Templates are used only when your form is displayed in full-page view, and not when it is displayed as a portlet. When a form is displayed as a portlet, the host page's style controls the look and feel.
Preview Template	Click to view the appearance of the template currently selected in the Template drop-down list.
Display Name	Edit the display name of the form. You can specify HTML in this field.
Header Text	Enter any introductory text that you want to display at the top of the form, just below the title, but above any buttons. You can specify HTML in this field.
Footer Text	Enter any text that you want to display at the bottom of the form. You can specify HTML in this field.

Table A-5 (Cont.) Form Text Options on Tabular Format Forms

Option	Description
Help Text	Enter any text that you want to display in a help page for the form. OracleAS Portal automatically adds a help button to the form. Users can click this button to link to a page displaying the help text that you enter here. You can specify HTML in this field.

15. Click **Next**.

16. Optionally, enter the PL/SQL that will run at different points during the execution of the HTML code that creates this form (Figure A-21).

In the PL/SQL you enter into these fields, you can use constants for the OracleAS Portal schema, the application schema, and the application name. For more information, see "Referencing the OracleAS Portal Schema".

Figure A-21 Optional Fields for Entering Additional PL/SQL Code

Table A-6 lists and describes the options on this page.

Table A-6 Additional PL/SQL Code Options

Option	Description
... before displaying the page.	Enter a PL/SQL procedure that will execute before the HTML for the form is generated (that is, before the <FORM> tag is generated). In spite of the name of this field, the PL/SQL procedure actually executes after the page itself is displayed.

Table A-6 (Cont.) Additional PL/SQL Code Options

Option	Description
... before displaying the form.	Enter a PL/SQL procedure that will execute after the <FORM> tag but before displaying any form elements.
... after displaying the form.	Enter a PL/SQL procedure that will execute after all form elements are displayed but before the ending </FORM> tag.
... after displaying the page.	Enter a PL/SQL procedure that will execute after the ending </FORM> tag.
... before processing the form.	Enter a PL/SQL procedure that will execute before the form is processed.
... after processing the form.	Enter a PL/SQL procedure that will execute after the form is processed.

Note: If you want to display output from a PL/SQL procedure, you must enter the PL/SQL in one of these four fields:

- before displaying the page
- before displaying the form
- after displaying the form
- after displaying the page

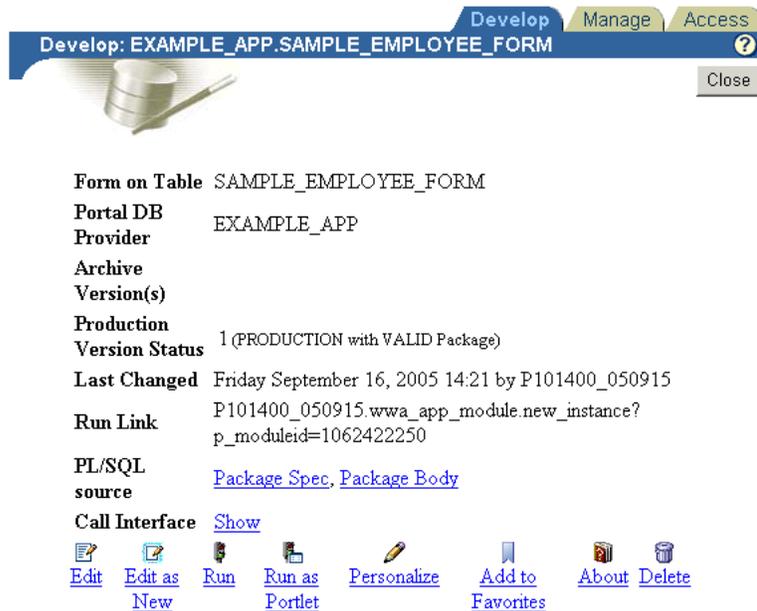
You cannot display output from a PL/SQL procedure in the before/after processing the form fields; the output will not display.

Additionally, if you want to display output from your PL/SQL procedure, you must specify the schema name with the procedure. This is required even if the form and the procedure are in the same schema.

17. Click **Finish** to save your changes.

Once you click **Finish**, Portal jumps to a summary page from which you can manage your form (Figure A-22). These tasks are discussed in later sections in this appendix.

Figure A-22 Form Summary Page



18. Click Close to return to the Portal Navigator.

A.1.4.3 Building Reports Declaratively

Figure A-23 A Sample Report

Department Number	Manager	Employee	Job
20	7902 SMITH	CLERK	
30	7698 ALLEN	SALESMAN	
30	7698 WARD	SALESMAN	
20	7839 JONES	MANAGER	
30	7698 MARTIN	SALESMAN	
30	7839 BLAKE	MANAGER	
10	7839 CLARK	MANAGER	
20	7566 SCOTT	ANALYST	
10	(null) KING	PRESIDENT	
30	7698 TURNER	SALESMAN	
20	7788 ADAMS	CLERK	
30	7698 JAMES	CLERK	
20	7566 FORD	ANALYST	
10	7782 MILLER	CLERK	

All rows for company Presidents are highlighted in yellow.

Reports display data from tables and views (Figure A-23). You can base a report on multiple tables or views using a JOIN condition. You can highlight data that satisfies conditions you specify. For example, you can display in bold red text the records of all employees who have been employed less than two years. You can create hypertext links from values displayed in the report to other OracleAS Portal database portlets or URLs.

Additionally, the wizards enable you to specify other options to achieve the following results:

- Limit data displayed in the report

- Sum column values
- Use logical operators to select data within the columns
- Format data in the report
- Format the report's personalization form
- Specify PL/SQL code that executes at various points in the report.

The OracleAS Portal Portlet Builder wizards provide three construction methods for building reports:

- Query By Example (QBE) Reports
- Reports From Query Wizard
- Reports From SQL Query

These reports are described in [Table A-1](#). This section describes how to build a report using the Query Wizard.

To build a report using the Query Wizard:

1. Follow the instructions detailed in "[Building Portlets Declaratively](#)".
Return to this section once you complete step 6.
2. Click the **Report** link next to **Create New...**([Figure A-24](#))

Figure A-24 The Report Link in the Example Applications Portal DB Provider

These are the portlets and actions available to you.
 Create New... [Form](#), [Report](#), [Chart](#), [Calendar](#), [Dynamic Page](#),
[XML Component](#), [Hierarchy](#), [Menu](#), [URL](#), [Frame](#)
[Driver](#), [Link](#), [List of Values](#), [Data Component](#)

Path: [Providers](#) > [Locally Built Providers](#) > **Example Application**

3. On the Reports page, click **Reports From Query Wizard** ([Figure A-25](#)).

Figure A-25 The Reports From Query Wizard Link in the Portlet Builder

Reports

Create a report that allows end users to query data in tables or views, or a Query by Example report that allows end users to query as well as manage data.

[Query By Example \(QBE\) Reports](#)
Build a QBE Report that allows end users to query, insert, update and delete data in table and views.

[Reports From Query Wizard](#)
Let the wizard build the SQL query for you.

[Reports From SQL Query](#)
Write your own SQL Query.

4. In the **Name** field, enter an internal name for the report ([Figure A-26](#)).

Figure A–26 The First Step in the Report From Query Wizard

RPT_1118150514

Step 1 of 16

Report Name and Portal DB Provider

Enter a name for the report and choose the Portal DB Provider that will own it. The Portal DB Providers that you can choose in this step are those in which you have privileges to build components.

Name: sample_report

Display Name: Sample Report

Description: Sample report

Portal DB Provider: EXAMPLE_APP

Next > Cancel

The internal name is not published to users.

5. In the **Display Name** field, enter a display name for the report (Figure A–26).

The display name is used at runtime. It displays as the title of the browser window as well as in the banner of the report. When the report is published as a portlet, the display name is used as the title of the portlet and in the List of Available Portlets in the Portlet Repository.

6. From the list of **Portal DB Providers**, select the provider that will own this report (Figure A–26).

We recommend that you use a provider specifically created for owning, or hosting, your declaratively-built portlets. This list displays only those providers in which you have been granted privileges to build portlets.

7. Click **Next**.
8. From the **Tables and Views** list, choose one or more tables or views on which to base this report (Figure A–27).

Note: In the **Tables and Views** field, you can use constants for the OracleAS Portal schema and the application schema (for example, enter #APP_SCHEMA#.EMP). For more information, see "[Referencing the OracleAS Portal Schema](#)".

Figure A-27 Selecting a Data Source for the Report



9. Click **Add** after each selection (Figure A-28).

Figure A-28 Clicking Add to Add a Data Source



10. Click **Next**.
11. If you are basing your report on multiple tables or views, identify the columns that will be joined to one another.

This page displays only when you have selected multiple columns or views in the previous step. Default join conditions are automatically generated. You can accept or modify these defaults.

12. Click **Next**.
13. Select the columns you want to display in your report (Figure A-29).

Figure A-29 *Selecting the Columns that Will Display in the Report*

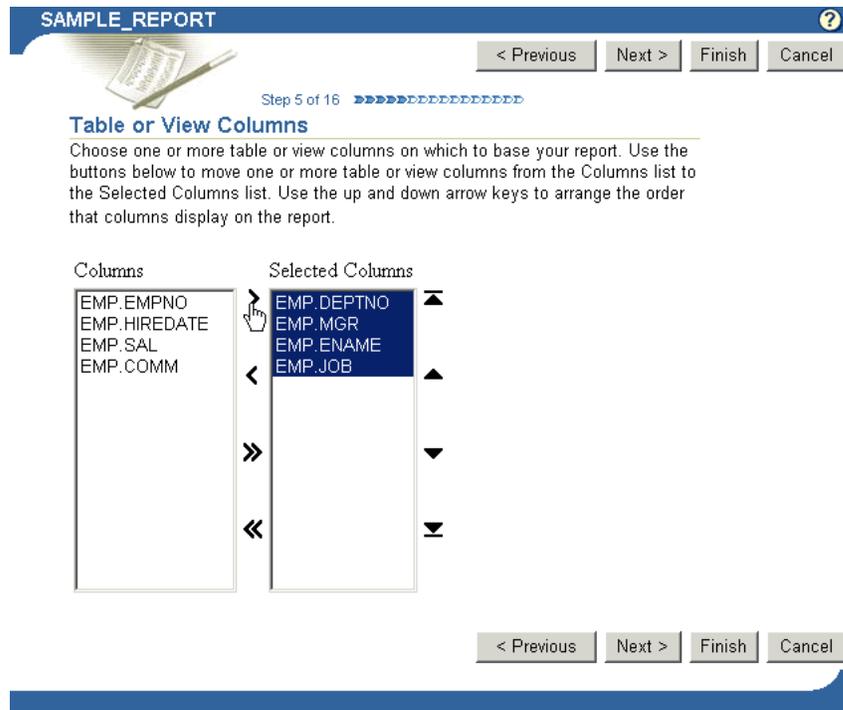


Table or View Columns

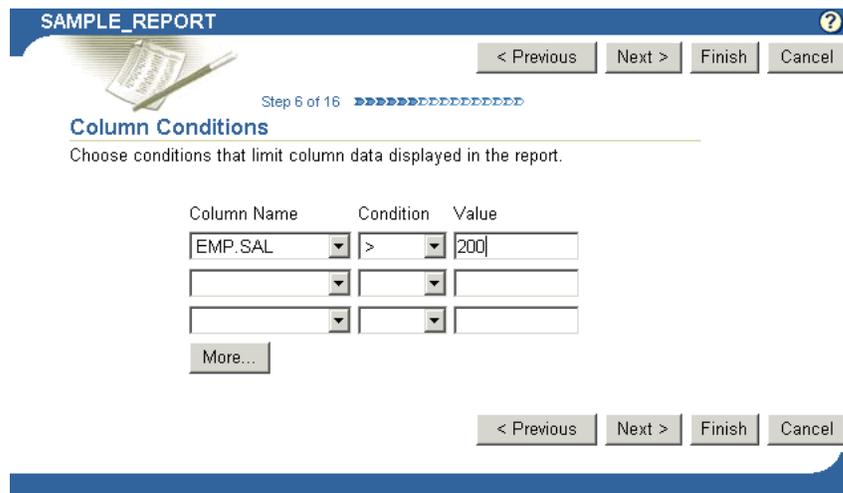
Choose one or more table or view columns on which to base your report. Use the buttons below to move one or more table or view columns from the Columns list to the Selected Columns list. Use the up and down arrow keys to arrange the order that columns display on the report.

Columns	Selected Columns
EMP.EMPNO	EMP.DEPTNO
EMP.HIREDATE	EMP.MGR
EMP.SAL	EMP.ENAME
EMP.COMM	EMP.JOB

Click the arrows between the two columns to move individual selections or the entire list from one column to the other. Use the rearrange icons to the right of the **Selected Columns** list to set the order of appearance of your selected columns. Select no more than 255 columns.

14. Click **Next**.
15. Optionally, specify conditions that limit the data displayed in the report (Figure A-30).

Figure A-30 *Setting Column Conditions*



Column Conditions

Choose conditions that limit column data displayed in the report.

Column Name	Condition	Value
EMP.SAL	>	200

More...

Table A-7 lists and describes the options on this page.

Table A-7 Options on the Column Conditions Page

Option	Description
Column Name	Choose a column if you want to specify a condition for the data in the report. The column need not be one that was selected for display. For example, you can choose a salary column that is not selected for display to limit the displayed data to only those employees that meet your specified salary condition, such as salary must be greater than \$200. To set this condition, choose (for example) SAL under Column Name , then choose a Condition of >, and enter 200 as your Value .
Condition	Choose conditions that will define Column Name 's relationship to Value . Choose from: <ul style="list-style-type: none"> ■ equal to (=) ■ greater than (>) ■ greater than or equal to (>=) ■ less than (<) ■ less than or equal to (<=) ■ like ■ not equal to (!=) ■ null ■ not null ■ in ■ not in
Value	Enter a value that limits which rows of the identified column are displayed in the report. To specify multiple values after an IN or NOT IN condition, type a colon (:) between each value, for example, 10:20:30.
More ...	Click to display more fields for adding more conditions on this page.

16. Click Next.**17. Select from three report layout types: Tabular, Form, or Custom.**

- **Tabular** layouts are based on options you choose in the Report Building wizard. Results are displayed in a table format, where each record represents a row in the underlying table or view, and each data column displays as a column in the table.
- **Form** layouts are based on options you choose in the Report Building wizard. Results are displayed in rows, where each data column is displayed in a separate row.
- **Custom** layouts are based on HTML code that you supply in a later wizard step. Because you specify your own HTML code, you will have a greater level of control over the appearance of your report than you would using a structured (tabular or form) layout.

This description will proceed as if you have selected a tabular layout. Some of the wizard steps you would take with other types of layouts are not included in the construction of a tabular report. For example, with a custom layout, you would be given an opportunity to specify your custom HTML code. That step does not display in the wizard when you choose a tabular layout.

18. Click Next.

19. Specify column formatting (Figure A-31).

Figure A-31 The Column Formatting Page

Table A-8 lists and describes the options presented on this page.

Table A-8 Column Formatting Options for a Tabular Report

Option	Description
Column	Displays the names of the table or view columns you selected in a previous wizard step.
Column Heading	Enter the name you will use to identify this column in your report. For example, if your table has an EMPNO column, you can enter <code>Employee ID Number</code> , in lieu of the column's actual name.
Sum	Select to add values together and display the result in the report.
Data Type	Displays the data type of the data in the associated column.
Align	Choose whether to align data to the left, center, or right margin of a report column. By default, numeric data aligns to the right, and alphabetical data aligns to the left.
Display as	Choose from: <ul style="list-style-type: none"> Text—Displays the value in the report without interpreting any associated HTML tags. For example, the value <code><i>Name</i></code> displays as <code><i>Name</i></code>. HTML—Displays the value in the report using associated HTML tags. For example, the value <code><i>Name</i></code> displays as <code>Name</code>. Hidden—Hides the value from view in the report. For example, choose Hidden for columns whose values are included for link parameters that you do not want displayed in the report.
Format Mask	Enter an Oracle display format for columns that contain date and numeric data types. See Table A-9 and Table A-10 for examples of date and number format masks. You cannot use format masks in reports generated in Excel format.

Table A-8 (Cont.) Column Formatting Options for a Tabular Report

Option	Description
Link	Create a link from the column to another OracleAS Portal portlet. The column value will display as a hypertext link. You can specify a link only if one has already been created for this column and has been stored in the database.
Edit Link	Click to display the Set Link Parameters window. In this window, you can set the values of the link parameters to pass to the target portlet. Enter a static value, such as 10 or KING, or select from the list of columns you identified in the table or view columns step earlier in this wizard. If you need the value of a column for a link parameter, but do not want that column displayed in the report, you can set the Display as value to Hidden .
Width Type	Specify one of the following: <ul style="list-style-type: none"> ■ Char—Displays the output in the specified number of characters per line. For example, if you enter 20 in Width, the report displays 20 characters of the column data in each line. If the number of characters exceeds the specified number, the remaining characters are wrapped to the next line. Note, however, that if the output is ASCII format, Char is based on the column width. ■ Pixel—Displays the output in the specified number of pixels per row. For example, if you enter 10 in Width, the column data displays 10 pixels of data per line. ■ Percent—Displays the output in a column that takes up the specified percentage of the table. For example, if you enter 25 in Width, the column data displays in a column that takes up 25 percent of the overall table width.
Width	Enter the numeric value for the width type.

Table A-9 Examples of Date Format Masks

Sample Date Format	Date Displayed
MM/DD/RR	03/04/85
Mon. DD, RRRR	Mar. 4, 1985
Day Month DD fmHH:MI AM	Monday March 4 11:35 PM
Dy Mon ddth fmHH24:MI:SS	Mon Mar 4th 23:35:22
Day "the" ddthsp "of" Month	Monday the fourth of March

Table A-10 Examples of Number Format Masks

Sample Number Format	Number	Number Displayed
-0000	7934	"7934"
	-7934	"-7934"
-00000	7934	"07934"
-NNNN	7639	"7639"
	535	"535"
+NNNN	100	"100"
	-99	"-99"

Table A-11 (Cont.) Options on the Formatting Conditions Page of the Report Wizard

Option	Description
Condition	<p>Choose conditions that will define Column's relationship to Value. Choose from:</p> <ul style="list-style-type: none"> ▪ equal to (=) ▪ greater than (>) ▪ greater than or equal to (>=) ▪ less than (<) ▪ less than or equal to (<=) ▪ like ▪ not equal to (!=) ▪ null ▪ not null ▪ in ▪ not in
Value	<p>Enter a column value to trigger the condition. There is no need to apply formatting masks to numeric values. For example, in a table with an EMPNO column, if you want to apply special formatting to EMPNO values greater than 3000, select > for the Condition, and enter 3000 in this field.</p> <p>To specify multiple values after an IN or NOT IN condition, type a colon (:) between each value, for example, 10:20:30.</p>
Row/Col	Choose whether to apply the conditional formatting to an entire row or to just the affected column data. If you specify a condition, you must choose <Row> or a column name here.
Color	Choose a text color for displaying data that meets the specified condition.
Background Color	Choose a background color for the column or row that contains data that meets the specified condition. In some cases, the background color does not change as expected. This is a known issue with reports.
Font Face	Choose a font in which to display data that meets the specified condition.
A	Select to display results that meet the specified condition in bold.
<i>A</i>	Select to display results that meet the specified condition in italic.
<u>A</u>	Select to underscore results that meet the specified condition.
Blink	Select to cause results that meet the specified condition to blink on and off.
Seq	Enter a sequential number to establish an order of precedence for execution of the formatting. This is useful, for example, when a row contains data that meets more than one condition, and the formatting rules differ for each. The condition with the highest position in the order (that is, 1), takes precedence over all the others.

22. Click **Next**.

23. Define display options for the various possible views of the report:

- [Table A-12](#) describes display options common to all views ([Figure A-33](#)).
- [Table A-13](#) describes display options for full-page views ([Figure A-34](#)).
- Options for portlet views are the same as those for full-page views, with a few noted exceptions. See [Table A-13](#) and [Figure A-34](#).
- [Table A-14](#) describes display options for column breaks ([Figure A-35](#)).
- [Table A-15](#) describes display options for row order ([Figure A-36](#)).
- [Table A-16](#) describes display options for mobile devices ([Figure A-37](#)).

Figure A-33 Display Options Common to All Views

Common Options

Choose common options that affect the appearance of the report displayed in portlet mode and in a full Web page.

Show Total Row Count Show NULL Values as
 Embed *interMedia* rich content in the report
 Expire After (minutes)
 Default Format

Table A-12 Report Display Options Common to All Views

Option	Description
Show Total Row Count	Select to display the total number of rows in the report.
Show Null Values as	Enter the text string you want to display for all null values in the report, for example, (null).
Embed <i>interMedia</i> rich content in the report	Select to generate report output that shows any <i>interMedia</i> data values, such as audio, video, or images. For more information, see " Building Forms and Reports against interMedia Rich Content ".
Expire After (minutes)	Enter the number of minutes after the initial display to keep the report in the cache. When the time expires, the report data is refreshed from the database.
Default Format	Choose a display format for the report: <ul style="list-style-type: none"> ■ HTML—Formats the report using HTML tables, and displays output on a new page in the Web browser. Portlets that contain large amounts of data may take longer to display in this format. ■ Excel—Formats the report for display in Microsoft Excel. When running the finished report, your local Excel settings may make it necessary for you to first save the report locally before it can be opened and viewed. ■ ASCII—Formats the report using the HTML PRE tag to display heading and values in the report as ASCII text. This option is useful for displaying large amounts of data.

Figure A–34 Report Display Options for Full Web-Page and Portlet Views**Full Page Options**

Choose options that affect the appearance of the report displayed in a full Web page.

	Font Face	Font Color	Size
Heading	<input type="text" value="Tahoma"/>	<input type="text"/>	<input type="text" value="12pt"/>
Row Text	<input type="text" value="Tahoma"/>	<input type="text"/>	<input type="text" value="12pt"/>
Heading Background Color	<input type="text"/>	Table Row Color(s)	<input type="text" value="Aquamarine"/> <input type="text" value="Black"/>
Border	<input type="text" value="No Border"/>	Maximum Rows Per Page	<input type="text" value="20"/>
<input type="checkbox"/> Draw Lines Between Rows		<input type="checkbox"/> Log Activity	<input type="checkbox"/> Show Timing
<input type="checkbox"/> Show Query Conditions			

Portlet Options

Choose options that affect the appearance of the report displayed in portlet mode.

	Page Style	Font Face	Font Color	Size
Heading	<input type="text" value="Portlet Heading1"/>	<input type="text" value="<Default>"/>	<input type="text" value="<Default>"/>	<input type="text" value="<Default>"/>
Row Text	<input type="text" value="Portlet Text1"/>	<input type="text" value="<Default>"/>	<input type="text" value="<Default>"/>	<input type="text" value="<Default>"/>
Note : Font face , color and size override the Page Style settings.				
Heading Background Color	<input type="text"/>	Table Row Color(s)	<input type="text" value="Aquamarine"/> <input type="text" value="Black"/>	
Border	<input type="text" value="No Border"/>	Maximum Rows Per Page	<input type="text" value="20"/>	

Table A–13 Report Display Options for Full Web-Page and Portlet Views

Option	Description
Font Face	Specify a font for report text.
Font Size	Specify a font size for report text. Use relative values, such as +1, +2, and so on. Relative font size is the last font size specified in the HTML code for the page plus the relative value. For example, the last font size specified in HTML code is 14 points; a new heading is coded at +2 font size; the heading will display in 16-point type.
Border	Specify the thickness of border to display around the report. Choose No Border , Thin Border , or Thick Border .
Font Color	Specify a font color for report text.
Page Style	Choose the page style you wish to use for the report when it appears as a portlet.
Heading Background Color	Specify a background color for report column headings.
Table Row Color(s)	Specify a background color for report rows. To choose more than one color use CTRL-Click (Windows). Rows will display in alternating colors.
Maximum Rows Per Page	Enter the maximum number of rows you want to display in the report.
Draw Lines Between Rows	Select to display lines between report rows.
Log Activity	(Full page only.) Check to enter performance information and the names of users who request the report in the OracleAS Portal activity log.
Show Timing	(Full page only.) Check to display report timing at the bottom of the report. Timing runs from when the server receives the request to generate the report to when the HTML for the report is generated.

Table A-13 (Cont.) Report Display Options for Full Web-Page and Portlet Views

Option	Description
Show Query Conditions	(Full page only.) Check to display user-specified parameters that are passed to the query that created the report and the time when the report was created.

Figure A-35 Report Display Options for Column Breaks

Break Options

Choose whether to break the report on values in one, two or three column vlaues.

Break Style

First Break Column

Second Break Column

Third Break Column

Table A-14 Report Display Options for Column Breaks

Option	Description
Break Style	Choose a break style.
First Break Column	Choose the first column on which to break. For example, if you choose DEPTNO, the report will show all the rows associated with the first department number, followed by all the rows associated with the next department number, and so on. If you specify break columns, then you must also specify Order by values for the columns in the same order (see Table A-15).
Second Break Column	Choose the second column on which to break. If you do not require a second level break, choose %.
Third Break Column	Choose the third column on which to break. If you do not require a third level break, choose %.

Figure A-36 Report Display Options for Row Order

Row Order Options

Choose the columns whose values will be used to sort rows in the report.

Order by

then by

then by

then by

then by

then by

Table A-15 Report Display Options for Row Order

Option	Description
Order by	Choose the table or view column whose values will be used to sort rows in the report. Choosing this option is equivalent to specifying a SQL ORDER BY clause. Choose Ascending to sort A to Z or 0 to 9. Choose Descending to sort Z to A or 9 to 0.
then by	Choose additional columns whose values will be used to sort report rows. For example, if you choose Order by Department ID, then by Employee Name, Oracle Portal sorts report rows numerically using department IDs. Rows containing the same Department ID are then sorted alphabetically using employee names.

Figure A–37 Report Display Options for Mobile Devices

Mobile Display Options

Choose the columns whose values will be displayed when report is viewed on a mobile device.

Columns to Display EMP.DEPTNO
EMP.MGR
EMP.ENAME
EMP.JOB Maximum Rows Per Page

Table A–16 Report Display Options for Mobile Devices

Option	Description
Columns to Display	Choose the columns you want to display on a mobile device. Use this feature to reduce the size of the report to better fit onto the smaller screens available on mobile devices. For example, you would probably want to limit the number of columns displayed to 2 or 3 for most mobile devices.
Maximum Rows Per Page	Enter the maximum number of rows you want to display on a single screen. For example, you probably ought to set this option to a relatively small value, such as 5, for most mobile devices.

24. Click Next.

25. In the **Personalization Form Display Options** section, choose the parameters that you want to display on the report's personalization form (Figure A–38).

Figure A–38 Detail of the Personalization Form Display Options Page

Personalization Form Display Options

Choose the parameters that you want to display on the report's personalization form. For each parameter you choose, an entry field appears on the personalization form that enables end users to choose their own conditions for displaying data in the report. Check **Value Required** if you want to require the end user to enter a value in the parameter entry field.

Value Required	Column Name	Prompt	LOV	Display LOV As	Make Public
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>

For each parameter you choose, an entry field appears on the personalization form that enables users to choose their own conditions for displaying data in the report. Check **Value Required** if you want to require the user to enter a value in the parameter entry field. If you wish, you can use bind variables to allow users to specify their own amounts. See "Using Bind Variables" for more information.

Table A–17 lists and describes the display options for the report personalization form.

Table A–17 Display Options for the Personalization Form Display Options Page

Option	Description
Value Required	Select to require that the user specify a value for the column's entry field on the report personalization form. If you do not check this box, the user will not be required to specify a value.

Table A–17 (Cont.) Display Options for the Personalization Form Display Options Page

Option	Description
Column Name	Choose a table or view column. An entry field will be added to the report personalization form. Users can specify values that limit the data displayed in the report. Entry fields appear only for the columns you select here.
Prompt	Enter the prompt text you want to display next to the entry field. The prompt text tells users what to enter in the field. For example: Enter a Department Number:
LOV	Select a list of values (LOV) for the column's entry field. Users of the personalization form can choose values from this list to limit the data displayed in the report. Click the Browse icon next to this field to locate an LOV. Note that the LOV must already be built and stored in the Portal Repository. For more information, see " Building Lists of Values Declaratively ". In the LOV field, you can use a constant for the application name (for example, enter #APP_NAME#.dept_lov). For more information, see " Referencing the OracleAS Portal Schema ".
Display LOV As	Choose a format for displaying your list of values. Choose from: <ul style="list-style-type: none">■ <Blank>: No option is selected.■ Check box: Each selection displays with a check box next to it. Users select or clear the box to indicate their preferred value.■ Combo box: Combines a pop-up list and a manual entry field. Users can either select a provided value or enter their own.■ Pop up: Provides a pop-up list from which users select a value.■ Radio group: Lists each selection with a radio button next to it. Users select one of the buttons to indicate their preferred value.■ Multiple Select: Allows users to choose more than one value.
Make Public	Select to allow values to be made public, that is, to allow non-authenticated users to see them. Be sure to make public any element that will be a variable in the list of portlet parameters associated with a page parameter.
More Parameters	Click to display more fields on this page to include more table or view columns on the report personalization form.

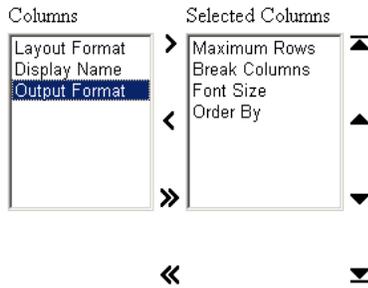
26. In the **Formatting options** section, choose formatting options to include on the report personalization form ([Figure A–39](#)).

Including one or more of these selections enables users to have a greater level of control over the final appearance of the report.

Figure A–39 The Formatting Options Section of the Personalization Form Display Options Page

Formatting options

Choose formatting options that you want to display on the report's customization form. End users can choose these options to format the report.

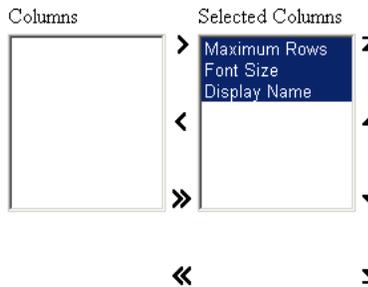


27. In the **Public Formatting Options** section, choose formatting options to include on the parameter tab for the page where the report is displayed (Figure A–40).

Figure A–40 The Public Formatting Options Section of the Personalization Form Display Options Page

Public Formatting Options

Choose formatting options that you want to display on the page's parameter tab. End users can choose these options to format the report.



28. In the **Button Options** section, select the buttons that will display on the report personalization form (Figure A–41).

Table A–18 lists and describes button display options for the report personalization form.

Figure A–41 The Button Options Section of the Personalization Form Display Options Page

Button Options

Choose the buttons that you want to display on the report's customization form. End users can click the buttons to perform various actions on the report.

Button	Name	Location	Alignment
<input checked="" type="checkbox"/> Run	Run Report	Top	Center
<input checked="" type="checkbox"/> Save	Save	Top	Center
<input type="checkbox"/> Batch	Batch	Top	Center
<input checked="" type="checkbox"/> Reset	Reset	Top	Center

Table A–18 Button Display Options for the Personalization Form Display Options Page

Option	Description
Button	Select one or more buttons to display on the report personalization form: <ul style="list-style-type: none">■ Run—Displays the URL portlet with the options the user has specified in the personalization form.■ Save—Saves users' current selections to enable them to rerun a report using the same parameters without having to reenter them into the report personalization form. When you include this button, the report personalization form also displays a Reset to Defaults button that resets all values in the report personalization form to their default values.■ Batch—Runs the URL portlet in batch mode and saves the results in the database.■ Reset—Undoes any changes made to the report personalization form since the last Save, Reset, or Reset to Defaults event.
Name	Enter the label that will display on the selected button. Keep the name short to avoid displaying large buttons. You cannot change the label on the Reset to Defaults button.
Location	Specify the location of the button on the report personalization form. Choose from Top , Top and Bottom , or Bottom .
Alignment	Specify the alignment of the button on the report personalization form. Choose from Left , Center , or Right .

29. Click **Next**.

30. Optionally, select a template to set the look and feel of the report and the report personalization form when they are displayed on a full Web page.

The template you choose here applies to both the report and the report personalization form when they are displayed on a full Web page. The template is not used when the report and report personalization form are displayed as portlets; in this case, the style of the page is used.

The template controls the look and feel of the page on which the report appears. In contrast, the display options you have specified on other pages in this wizard control the look and feel of the report itself.

Click the **Preview** button to see how the template elements will display (Figure A–42).

Figure A-42 Report and Personalization Form Text Page



Report and Personalization Form Text

Enter descriptive text that you want to appear on the top or bottom of the report and its personalization form. You can add a report title for the report and personalization form. You can also choose a template that controls the look and feel of the page on which the personalization form appear.

Template	<input type="text" value="PUBLIC.TEMPLATE_3"/>	<input type="button" value="Preview Template"/>
	Report	Personalization Form
Display Name	<input type="text" value="Sample Report"/>	<input type="text" value="Personalize Report"/>
Description	<input type="text" value="Sample report"/>	
Header Text	<input type="text" value="Report on Current Employees"/>	<input type="text" value="Report on Current Employees"/>
Footer Text	<input type="text" value="All rows for company Presidents are highlighted in yellow."/>	
Help Text	<input type="text"/>	<input type="text"/>
About Text	<input type="text"/>	<input type="text"/>

- 31. Optionally, enter text for display on the top or bottom of the report or the report personalization form (Figure A-42).

Table A-19 lists and describes the options for including text. Enter text for the report in the left column. Enter text for the report personalization form in the right column.

Table A-19 Options for Including Text on a Report or a Report Personalization Form

Option	Description
Display Name	Edit the display name for the report and the report personalization form. You can specify HTML in this field.
Description	(Report only.) Provide a description of the purpose of this report. This is an attribute that may or may not display, depending on which attributes have been selected for display in the region where the report or report portlet is placed.
Header Text	Enter any introductory text for display at the top of the report or report personalization form. Header Text displays below the display name or title. You can specify HTML in this field.
Footer Text	Enter any text for display at the bottom of the report or report personalization form. You can specify HTML in this field.

Table A–20 Options for Executing PL/SQL Code During Report Publication

Option	Description
... before displaying the page	Enter a PL/SQL procedure that will execute before the page containing the report or the report personalization form displays.
... after displaying the header	Enter a PL/SQL procedure that will execute after the report or the report personalization form header displays.
... before displaying the footer	Enter a PL/SQL procedure that will execute before the report or the report personalization form footer displays.
... after displaying the page	Enter a PL/SQL procedure that will execute after the page containing the report or the report personalization form displays.

34. Click Finish.

This saves the report and takes you to a summary page where you can manage and test run the report (Figure A–44). Subsequent sections in this appendix provide more detail about these tasks.

Figure A–44 The Report Summary Page

The screenshot displays the Report Summary Page for a report named 'EXAMPLE_APP.SAMPLE_REPORT'. The page includes the following information:

- Report:** SAMPLE_REPORT
- Portal DB Provider:** EXAMPLE_APP
- Archive Version(s):** (None listed)
- Production Version Status:** 1 (PRODUCTION with VALID Package)
- Last Changed:** Friday September 16, 2005 15:24 by P101400_050915
- Run Link:** P101400_050915_DEMO.SAMPLE_REPORT.show
P101400_050915_DEMO.SAMPLE_REPORT.show_parms
- PL/SQL source:** [Package Spec](#), [Package Body](#)
- Call Interface:** [Show](#)

At the bottom of the page, there are several action icons and links: [Edit](#), [Edit as New](#), [Run](#), [Run as Portlet](#), [Personalize](#), [Add to Favorites](#), [About](#), and [Delete](#).

A.1.4.4 Building Forms and Reports against *interMedia* Rich Content

You can integrate *interMedia* rich content, such as images, audio, and video, into the reports and forms you build with OracleAS Portal. These objects are stored in the Oracle Database 10g.

The database column types for the *interMedia* rich content you can display include:

- **ORDIMAGE:** This object type supports the storage, management, and manipulation of image data, such as GIF, JPEG, and BMP.
- **ORDAUDIO:** This object type supports the storage and management of audio data, such as MP3, AU, WAV, and MPEG

-
- **ORDVIDEO:** This object type supports the storage and management of video data such as REAL, QuickTime 3/4, AVI, and MPEG.

In addition to allowing the use of these *interMedia* rich content type columns in an OracleAS Portal report or form, object attributes can be displayed in join conditions, formatting, column conditions, and so on. For example, display a video clip's size or duration in a report, or set a report condition that specifies that only objects modified after a certain date will display.

Keep in mind that, although *interMedia* supports a variety of content types and formats, the browser being used to view this material must natively support the relevant MIME type or have an installed plug-in that displays rich content that is not typically supported on the Web. For example, most browsers can natively display GIF and JPEG images, but TIFF images are not displayed without an installed plug-in.

***interMedia* and Reports**

Two OracleAS Portal Reports Wizards offer the opportunity to include *interMedia* rich content:

- Reports from Query Wizard
- Query By Example Report (QBE)

With QBE reports, object-type attributes will not display. Consequently, trying to provide a value for an *interMedia*-based column in a report personalization form results in an error. This means that you cannot use a report personalization form for a QBE report that runs against *interMedia* object-type columns.

You can display *interMedia* rich content in a report in one of two ways:

- Embedded (inline)

The image, audio, or video runs in place within the report.

- As a linked icon

When a user clicks the link, the content is displayed in a new browser window, or it may be handled by the associated source application. For example, it may display in a RealPlayer window.

These display options apply to all columns that contain *interMedia* content in the OracleAS Portal report. They can be selected on the **Display Options** tab in the OracleAS Portal Report Wizard. By default, *interMedia* rich content is represented by icons in a report. Users click an icon to view the actual content. If you plan to rely on the default, you do not need to do anything further. If you plan to embed *interMedia* rich content, select the **Embed *interMedia* rich content in the report** check box on the **Display Options** page in the Report Wizard. Refer to [Table A-12](#).

For more information about the Report Wizard, see "[Building Reports Declaratively](#)".

***interMedia* and Forms**

Two OracleAS Portal Form Wizards offer the opportunity to include *interMedia* rich content in your form:

- Form based on table or view
- Master-detail form

With either of these methods, you must make sure that the underlying database object you are changing through your form is based on columns of type ORDIMAGE, ORDAUDIO, or ORDVIDEO.

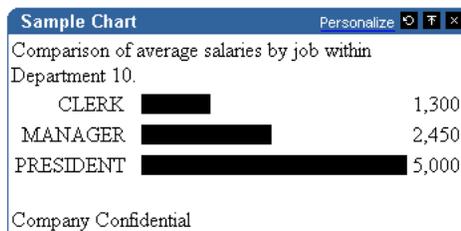
To include *interMedia* rich content in your form, on the **Formatting and Validation Options** page of the OracleAS Portal Form Wizard, select the column name in the left frame, and specify an **Item Type** of **File Upload (interMedia)** in the right frame.

Note: The assigning of column types is done outside of OracleAS Portal. Consult your database administrator if necessary to create a table with *interMedia* column types.

One advantage of uploading images, audio, and video clips into *interMedia*-based columns over uploading into BLOB columns is that the data is automatically parsed to extract several attributes, such as MIME type, length, and any user-defined metadata that might be included in the original media file. For example, a QuickTime file might contain close-captioning, or a RealVideo file might have copyright information. With *interMedia*-based columns, these attributes are automatically extracted and stored in the *interMedia* object for indexing and querying.

A.1.4.5 Building Charts Declaratively

Figure A–45 A Chart Built with the Portlet Builder Chart Wizard



Charts display data from database tables or views as bar charts. They are based on at least two table or view columns:

- Values in the **Label** column provide a display name for the bars on the chart.
- Values in the **Values** column calculate the size of the bars on the chart relative to one another. Value columns must always contain numeric data.

You can also specify a **Link** column. Values in this column create hypertext links from the chart's labels to other OracleAS Portal database portlets or URLs. For example, with a link in place, users can click the label in a chart and jump to a form that enables them to update the data on which the chart is based.

Charts are also an effective way to display aggregate data. You can use **Group By** and **Summary Options** in the wizard to sum the column values returned by your query, for example, the minimum, maximum, or average value, or the number of values in a column.

The portlet-building wizards in OracleAS Portal provide two construction methods for charts:

- Charts From Query Wizard
- Charts From SQL Query

The Query Wizard provides a greater level of assistance in constructing a chart. The SQL Query method provides you with a greater level of control over the query that will be used to fetch data for the chart.

This section describes how to build a chart using the Query Wizard.

To create a chart using the Query Wizard:

1. Follow the instructions detailed in "[Building Portlets Declaratively](#)".
Return to this section once you complete step 6.
2. Click the **Chart** link next to **Create New...** ([Figure A-46](#)).

Figure A-46 The Chart Link Next to Create New ...

These are the portlets and actions available to you.

Create New... [Form](#), [Report](#), [Chart](#), [Calendar](#), [Dynamic Page](#), [XML Component](#), [Help](#), [Jchv](#), [Menu](#), [URL](#), [Frame Driver](#), [Link](#), [List of Values](#), [Data Component](#)

Path: [Providers](#) > [Locally Built Providers](#) > **Example Application**

3. On the Charts page, click **Charts From Query Wizard** ([Figure A-47](#)).

Figure A-47 The Charts From Query Wizard Link

The screenshot shows the 'Charts' section header in a blue bar. Below it, there is a paragraph: 'Create a chart using a wizard that builds a SQL query for you or using a wizard that allows you to write your own SQL query.' Two links are provided: '[Charts From Query Wizard](#)' with the text 'Let the wizard build the SQL query for you.' and '[Charts From SQL Query](#)' with the text 'Write your own SQL query.'

4. On the resulting page enter an internal name for the chart in the **Name** field ([Figure A-48](#)).
- The internal name is not published to users.

Figure A-48 The First Step of the Chart Wizard

The screenshot shows the first step of the 'Chart Wizard'. The title bar reads 'CHART_1119135429'. There are 'Next >' and 'Cancel' buttons. A progress indicator shows 'Step 1 of 10' with a bar of 10 segments, the first of which is filled. The main heading is 'Chart Name and Portal DB Provider'. The instructions state: 'Enter a name for the chart and choose the Portal DB Provider that will own it. The Portal DB Providers that you can choose in this step are those in which you have been granted privileges to build components.'

The form contains the following fields:

- Name:**
- Display Name:**
- Description:**
- Portal DB Provider:**

'Next >' and 'Cancel' buttons are located at the bottom right of the form area.

5. In the **Display Name** field, enter the name by which users will identify this chart (Figure A-48).

The display name is used at runtime. It displays as the title of the browser window as well as in the banner of the chart. When the chart is published as a portlet, the display name is used as the title of the portlet and in the List of Available Portlets in the Portlet Repository.

6. In the **Description** field, enter a description of this chart (Figure A-48).

The description displays below the portlet in the Portlet Repository. It can be a summary of the portlet's purpose, a classification of its type, or any other descriptive information. It may be useful within your organization to have a standard approach to what is included in the description.

7. From the list of **Portal DB Providers**, select the provider that will own this chart (Figure A-48).

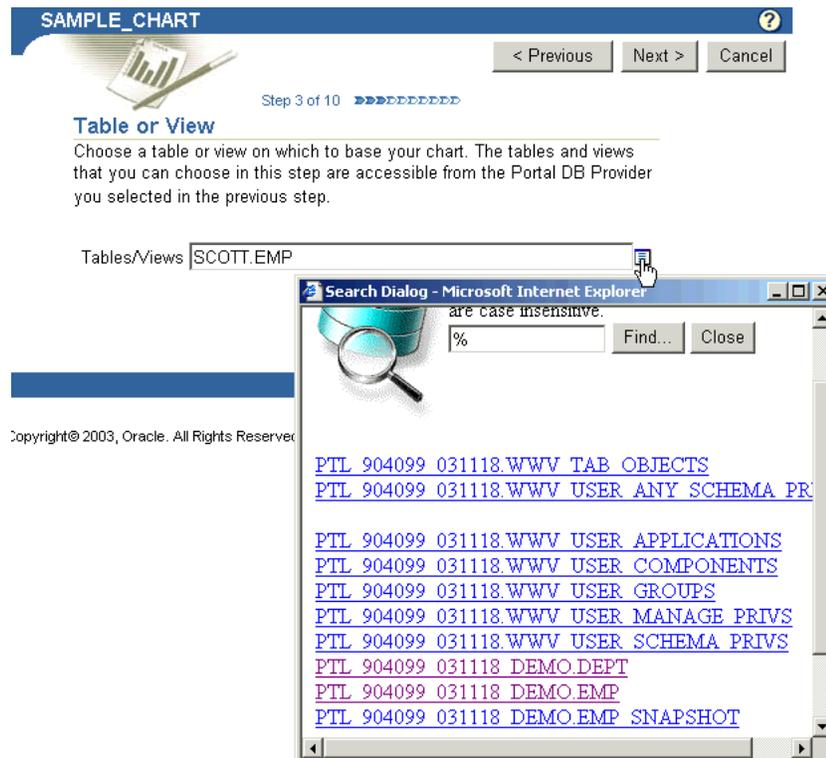
This list displays only those providers in which you have been granted privileges to build portlets. We recommend that you use a provider specifically created for owning, or hosting, your declaratively-built portlets.

8. Click **Next**.

9. Click the Browse icon next to the **Tables/Views** field, and choose a table or view on which to base your chart (Figure A-49).

Note: In the **Tables/Views** field, you can use constants for the OracleAS Portal schema and the application schema (for example, enter #APP_SCHEMA#.EMP). For more information, see "[Referencing the OracleAS Portal Schema](#)".

Figure A-49 Clicking the Browse Icon to Select a Table or View



The tables and views that you can choose in this step are those that are accessible from the Portal DB Provider you selected in the previous step. Additionally, the list is limited to those tables and views on which you have the following privileges: all table views in the provider schema, granted select to public, granted select to the provider schema.

If clicking the Browse icon produces a "No response from Server" message, and you know the table you want to select, try entering the table name directly into the field.

Note: You can choose only one table or view using this wizard. If you want to base the chart on more than one table or view, you must use the Charts from SQL Query wizard to write your own SQL.

10. Click **Next**.
11. Choose the column(s) that contain the values you will display as Labels, Links, and Values in the chart (Figure A-50).

Figure A-50 Columns to Be Used for Labels, Links, and Values in the Chart

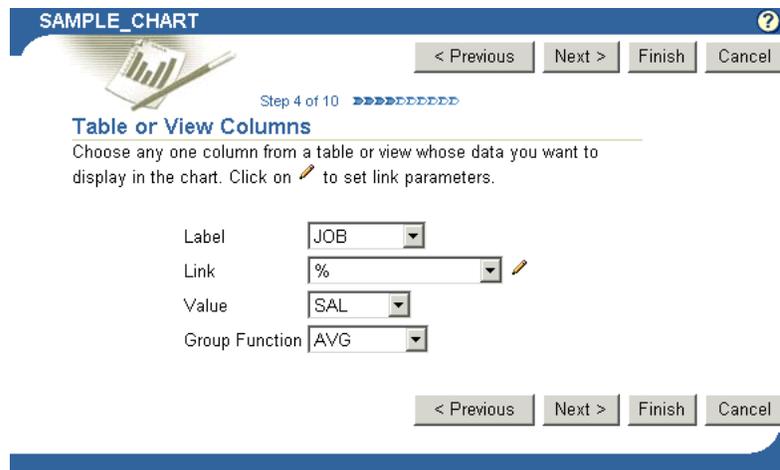


Table A-21 lists and describes the options on this page.

Table A-21 Data Selection Options for Charts

Option	Description
Label	Choose the column that contains the values you will use as labels for different bars on the chart. For example, if you were going to create a chart that compared salaries of each job title in the department, you might choose the JOB column as the Label , SAL as the Value , and AVG as the Group Function .
Link	Links must be preconstructed and stored in the database before you can use them here. Use this field to choose a preconstructed link that jumps from a chart bar's label to another OracleAS Portal portlet or URL. Click the Edit icon next to the Link field to set link parameters. If you do not set link parameters, the default values of the link are used.

Table A–21 (Cont.) Data Selection Options for Charts

Option	Description
Value	<p>Choose the column that contains the values to be used to calculate the relative size of the bars in the chart. Value columns always contain numeric data.</p> <p>The default for Value is 1. Specifying a value of 1 is useful if you also choose a group function. For example, you can choose the JOB column from SCOTT.EMP as the Label, 1 as the Value, and COUNT as the Group Function. This creates a chart that displays the number of employees in each job classification.</p>
Group Function	<p>A group function calculates a single summary value (% , sum, count, average, maximum, minimum, standard deviation, or variance) from groups of numeric values in the Value column. OracleAS Portal uses values in the Label column to determine these groupings.</p> <p>For example, you can choose the JOB column from SCOTT.EMP as the Label, SAL as the Value, and AVG as the Group Function. This creates a chart that displays the average salary for each job classification.</p>

12. Click **Next**.

13. Optionally, specify conditions that limit the data displayed in the chart.

For example, to display data from all employees in Department 10, choose **DEPTNO** from **Column Name**, choose = or like from **Condition**, and enter 10 in the **Value** field (Figure A–51).

Figure A–51 Defining Column Conditions for a Chart

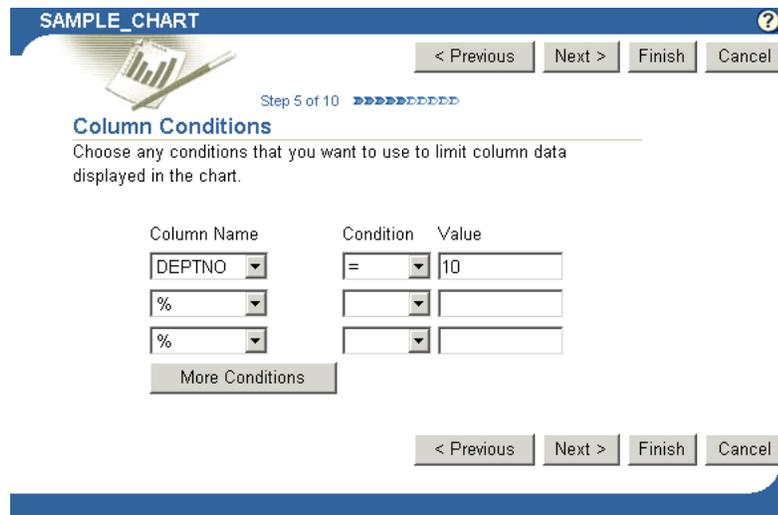


Table A–22 lists and describes the options that appear on the Column Conditions page.

Table A–22 Options on the Column Conditions Page

Option	Description
Column Name	Choose columns whose values will be used to limit the data displayed in the chart. For example, if you want to display values greater than 3000 from the EMPNO column of the SCOTT.EMP table, choose EMPNO as the Column Name , choose > from Condition , and enter 3 0 0 0 in the Value field.
Condition	Choose conditions that will define Column Name 's relationship to Value . Choose from: <ul style="list-style-type: none"> ■ equal to (=) ■ greater than (>) ■ greater than or equal to (>=) ■ less than (<) ■ less than or equal to (<=) ■ like ■ not equal to (!=) ■ null ■ not null ■ in ■ not in
Value	Enter a value that will limit the data displayed in the chart. To specify multiple values after an IN or NOT IN condition, type a colon (:) between each value, for example, 10:20:30.
More Conditions	Click to add more fields for specifying additional conditions.

14. Click **Next**.

15. Optionally, specify conditions and define special formatting for chart data that will be used whenever those conditions are met.

For example, you can specify that a chart bar should be red if its related column value exceeds a particular amount (Figure A–52).

Figure A–52 Defining Formatting Conditions

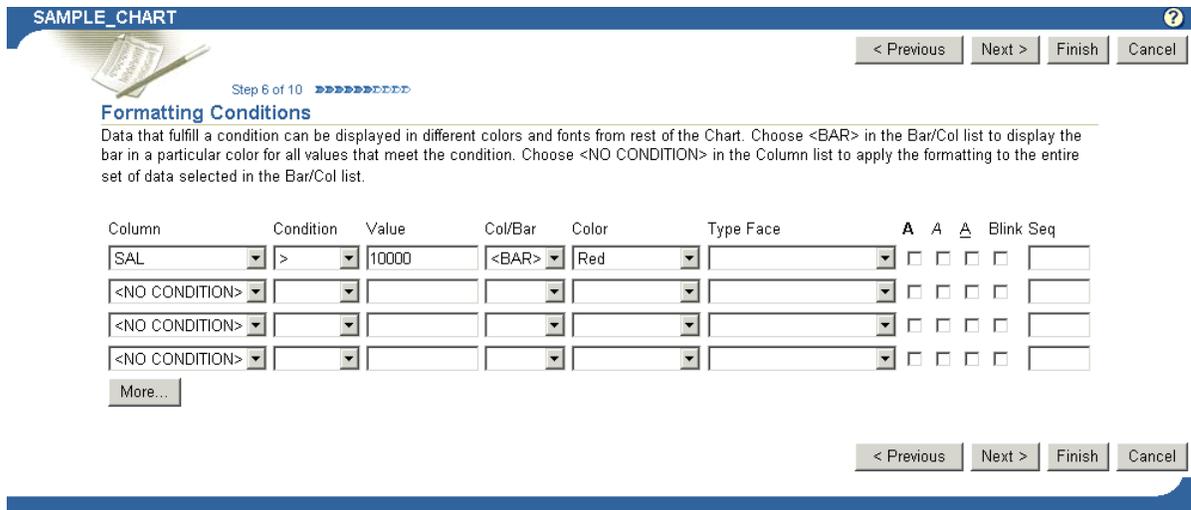


Table A-23 lists and describes the formatting condition options on this page.

Table A-23 Options on the Formatting Conditions Page of the Chart Wizard

Option	Description
Column	Choose a column on which the condition will be applied.
Condition	<p>Choose conditions that will define Column's relationship to Value. Choose from:</p> <ul style="list-style-type: none"> ■ equal to (=) ■ greater than (>) ■ greater than or equal to (>=) ■ less than (<) ■ less than or equal to (<=) ■ like ■ not equal to (!=) ■ null ■ not null ■ in ■ not in ■ between
Value	<p>Enter a column value to trigger the condition. There is no need to apply formatting masks to numeric values. For example, in a table with an EMPNO column, if you want to apply special formatting to EMPNO values greater than 3000, select > for the Condition, and enter 3000 in this field. Enter date values in nls_date_format.</p> <p>To specify multiple values after an IN or NOT IN condition, type a colon (:) between each value, for example, 10:20:30. To specify a BETWEEN condition, separate the two values by either a comma, a space, or the word <i>and</i>.</p>
Col/Bar	<p>Choose whether you want the conditional formatting to be applied to a displayed column name or to the <BAR> associated with value that meets the condition.</p> <p>For example, imagine that your chart uses the SAL and ENAME columns. ENAME is used to label each bar in the chart, and SAL is used to provide the value that drives the size of the bar. If you want a chart bar to turn red and blink if a salary is under 40,000, select <BAR>. If you want the ENAME to turn red and blink when the condition is met, select ENAME. If you want the salary, which is included in the chart along with the label and the bar, to turn red and blink when the condition is met, select SAL.</p>
Color	Choose a color for displaying data that meets the specified condition. The color will be applied to text or to the bar, depending on the choice you made in the Col/Bar field.
Type Face	Choose a font in which to display data that meets the specified condition.
A	Select to display results that meet the specified condition in bold.
<i>A</i>	Select to display results that meet the specified condition in italic.
<u>A</u>	Select to underscore results that meet the specified condition.

Table A–23 (Cont.) Options on the Formatting Conditions Page of the Chart Wizard

Option	Description
Blink	Select to cause results that meet the specified condition to blink on and off.
Seq	Enter a sequential number to establish an order of precedence for execution of the formatting. This is useful, for example, when a row contains data that meets more than one condition, and the formatting rules differ for each. The condition with the highest position in the order (that is, 1), takes precedence over all the others.

16. Click **Next**.

17. Define display options for the various possible views of the chart:

- [Table A–24](#) describes display options common to all views of a chart ([Figure A–53](#)).
- [Table A–25](#) describes display options for full-page views of a chart ([Figure A–54](#)).
- [Table A–26](#) describes display options for charts displayed as portlets ([Figure A–55](#)).
- [Table A–27](#) describes display options for charts displayed on mobile devices ([Figure A–56](#)).

Figure A–53 Display Options Common to All Chart Views

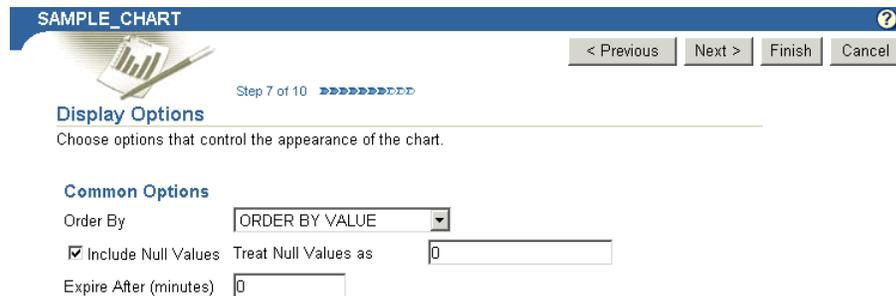


Table A–24 Display Options Common to All Chart Views

Option	Description
Order By	Choose a method for ordering the chart’s data: <ul style="list-style-type: none"> ■ ORDER BY VALUE—The bars in the chart are shown in the same numeric order as values in the table column that you specified in the Value entry field. ■ ORDER BY VALUE DESC—The bars in the chart are shown in reverse order of values in the table column that you specified in the Value entry field. ■ ORDER BY LABEL—The bars in the chart are shown in the same order as values in the table column that you specified in the Label entry field. ■ ORDER BY LABEL DESC—The bars in the chart are shown in the reverse order of values in the table column that you specified in the Label entry field.
Include Null Values	Select to display null values in the chart.

Table A–24 (Cont.) Display Options Common to All Chart Views

Option	Description
Treat Null Values as	Enter the text string you want to be displayed for any null values in the chart, for example: (this field is null).
Expire After (minutes)	Enter the number of minutes after the initial display to keep the chart in the cache. When the time expires, the chart data is refreshed from the database.

Figure A–54 Display Options for Full Web Page Chart Views

Full Page Options

Type Face	<input type="text" value="Tahoma"/>	Font Color	<input type="text"/>
Font Size	<input type="text" value="12pt"/>	Chart Type	<input type="text" value="Horizontal"/>
Axis	<input type="text" value="Zero (Standard)"/>	Bar Image	<input type="text" value="MULTI"/>
Chart Scale	<input type="text" value="200%"/>	Bar Width	<input type="text" value="15"/>
Bar Height	<input type="text" value="30"/>	Value Format Mask	<input type="text" value="999,999,999,999,999"/>
Maximum Rows Per Page	<input type="text" value="20"/>	Summary Options	<input type="text" value="Average value"/>
<input type="checkbox"/> Log Activity	<input type="checkbox"/> Show Timing	<input type="checkbox"/> Show Query Conditions	

Table A–25 Display Options Applying to Full Web-Page Chart Views

Option	Description
Type Face	Choose the font for displaying chart text.
Font Color	Choose the font color for displaying chart text. User-defined colors are not available for selection.
Font Size	Choose the font size for displaying chart text.
Chart Type	Choose whether to display the cart bars in a horizontal or vertical orientation.
Axis	Choose a method for displaying chart bars relative to the value of the chart's axis. For example, if you choose Zero , the value of the axis is set at 0. If you choose Average Value , the axis is set at the average of all values in the table or view column on which the Value section of the chart is based.
Bar Image	Choose an image that will be used to fill in the bars on the chart. Choose MULTI to display bars in different colors.
Chart Scale	Choose a percent (%) value to set the scale of chart bars relative to the Web page that will host the chart. Higher percentages display larger bars.
Bar Width	Choose a width in pixels for chart bars. This option applies to bars in both horizontally-and vertically-oriented charts.
Bar Height	Enter a height in pixels for chart bars. This option applies to bars in both horizontally-and vertically-oriented charts.
Value Format Mask	Enter a format for numeric values or dates that appear on the chart.
Maximum Rows Per Page	Enter the maximum number of bars you want to display per page.

Table A–25 (Cont.) Display Options Applying to Full Web-Page Chart Views

Option	Description
Summary Options	Choose one or more options to display summary information about the chart. Each option you choose is included in the summary information box at the bottom of the chart. Windows users can choose more than one option by pressing the Ctrl key while clicking each option.
Log Activity	Select to enter information in the OracleAS Portal activity log. Information includes performance statistics and the names of users who request the chart.
Show Timing	Select to display the time when the server received the request to generate HTML for the chart. This information is displayed at the bottom of the chart.
Show Query Conditions	Select to display all user-specified parameters passed to the SQL query that created the chart and the time the chart was created. This information is displayed at the bottom of the chart.

Figure A–55 Display Options for Charts Viewed As Portlets

Portlet Options

Page Style Type Face

Font Color Font Size

Note : Font face, color and size override the Page Style settings.

Bar Width Bar Height

Maximum Rows Per Page

Table A–26 Display Options for Charts Viewed as Portlets

Option	Description
Page Style	Choose the page style element to use for displaying chart text.
Type Face	Choose a font to override the font of the chosen page style element.
Font Color	Choose a font color to override the font color of the chosen page style element.
Font Size	Choose a font size to override the font size of the chosen page style element.
Bar Width	Choose a width in pixels for bars on the chart. This option applies to bars in both horizontally- and vertically-oriented charts.
Bar Height	Choose a height in pixels for bars on the chart. This option applies to bars in both horizontally- and vertically-oriented charts.
Maximum Rows Per Page	Enter the maximum number of bars you want to display in the chart.

Figure A–56 Display Options for Charts Viewed on Mobile Devices

Mobile Display Options

Maximum Rows/Page

Table A-27 Display Options for Charts Viewed on Mobile Devices

Option	Description
Maximum Rows Per Page	Enter the maximum number of bars you want to display in the chart. For example, you probably ought to set this option to a relatively small value, such as 5, for most mobile devices.

18. Click **Next**.

19. Define the content for display on the chart personalization form.

Use the options on this page to give your users control over what data will appear in their view of the chart.

For example, if you choose the DEPTNO column from the SCOTT.EMP table as a **Column Name** in this step, OracleAS Portal adds an entry field for DEPTNO to the chart's personalization form. Users can type a department number in the field to limit the display to data relevant to that department.

Optionally, you can add a list of values to the entry fields. Instead of requiring users to type a numeric value for DEPTNO, you could add a list of values that enables them to choose, for example, 10, 20, or 30.

In portlet implementations, the chart personalization form displays when users click the **Personalize** link at the top of the portlet. In full-page implementations, you can provide users with a link to run the chart; the link can target the chart personalization form, which in turn can have a **Run** button. Users click this button to run the chart once they've set their personalization options.

If you wish, you can use bind variables to allow users to specify their own values in the personalization form. See "[Using Bind Variables](#)" for more information.

- [Table A-28](#) describes chart personalization form display options ([Figure A-57](#)).
- [Table A-29](#) describes chart personalization form formatting options ([Figure A-58](#)).
- [Table A-30](#) describes chart personalization form public formatting options ([Figure A-59](#)).
- [Table A-31](#) describes chart personalization form button options ([Figure A-60](#)).

Figure A-57 Chart Personalization Form Display Options

Personalization Form Display Options

Choose the parameters that you want to display on the chart's personalization form. For each parameter you choose, an entry field appears on the personalization form that enables end users to select their own conditions for displaying data in the chart. Check Value Required if you want to require the end user to enter a value in the personalization form.

Value Required	Column Name	Prompt	LOV	Display LOV As	Make Public
<input type="checkbox"/>	DEPTNO	Limit data to this dep			<input checked="" type="checkbox"/>
<input type="checkbox"/>	%				<input type="checkbox"/>
<input type="checkbox"/>	%				<input type="checkbox"/>
<input type="button" value="More Parameters"/>					

Table A–28 Chart Personalization Form Display Options

Option	Description
Value Required	Select to require the user to specify a value for the column's entry field on the chart's personalization form.
Column Name	Choose a table or view column for inclusion on the chart personalization form. An entry field will display on the form that enables users to specify values that limit the data that will be displayed in the chart. If you do not choose a table or view column, no entry appears on the personalization form.
Prompt	Enter prompt text to display next to the entry field. The prompt text tells users what to enter in the field, for example: Choose the department number you want to display.
LOV	Select a list of values (LOV) for the column's entry field. Users of the personalization form can choose values from this list to limit the data displayed in the report. Click the Browse icon next to this field to locate an LOV. Note that the LOV must already be built and stored in the Portal Repository. For more information, see " Building Lists of Values Declaratively ". In the LOV field, you can use a constant for the application name (for example, enter #APP_NAME#.dept_lov). For more information, see " Referencing the OracleAS Portal Schema ".
Display LOV As	Select a format for displaying your list of values. Choose from: <ul style="list-style-type: none">■ <Blank>: No option is selected.■ Check box: Each selection displays with a check box next to it. Users select or clear the box to indicate their preferred value.■ Combo box: Combines a pop-up list and a manual entry field. Users can either select a provided value or enter their own.■ Pop up: Provides a pop-up list from which users select a value.■ Radio group: Lists each selection with a radio button next to it. Users select one of the buttons to indicate their preferred value.■ Multiple Select: Allow users to choose more than one value.
Make Public	Check this field if you want this element to display on the chart personalization form. Be sure to make public any element that will be a variable in the list of portlet parameters associated with a page parameter.
More Parameters	Click to add more entry fields on the personalization form.

Figure A–58 Chart Personalization Form Formatting Options

Formatting Options

Choose formatting options that you want to display on the chart's customization form. End users can select these options to format the chart.

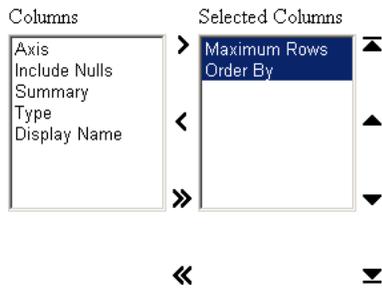


Table A–29 Chart Personalization Form Formatting Options

Option	Description
Axis	Select to enable users of the chart personalization form to choose a method for displaying chart bars relative to the value of the chart's axis. For example, if users choose Zero , the value of the axis is set at 0. If users choose Average Value , the axis is set at the average of all values in the table or view column on which the Value section of the chart is based.
Include Nulls	Select to enable users of the chart personalization form to specify whether to display null values in the chart.
Maximum Rows/Page	Select to enable users of the chart personalization form to specify the maximum number of bars to display in the chart.
Summary	Select to enable users of the chart personalization form to choose one or more options that display summary information about the chart. Each option that users choose is included in the summary information box at the bottom of the chart.
Type	Select to enable users of the chart personalization form to choose a font for displaying chart text.
Display Name	Select to allow users of the chart personalization form to edit the display name for the chart.
Order By	Select to enable users of the chart personalization form to set the display order for chart data.

Figure A–59 Chart Personalization Form Public Formatting Options

Public Formatting Options

Choose formatting options that you want to display on the page's parameters tab. End users can select these options to format the chart.

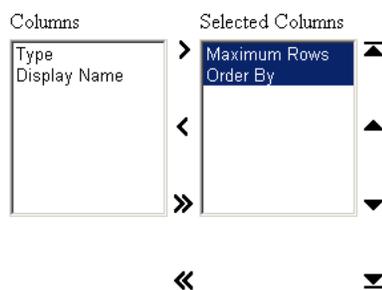


Table A–30 Chart Personalization Form Public Formatting Options

Option	Description
Type	Select to enable unauthenticated users of the chart personalization form to choose a font for displaying chart text.
Display Name	Select to enable unauthenticated users of the chart personalization form to edit the display name of the chart.
Maximum Rows	Select to enable unauthenticated users of the chart personalization form to specify the maximum number of bars to display in the chart.
Order By	Select to enable unauthenticated users of the chart personalization form to set the display order for chart data.

Figure A–60 Chart Personalization Form Button Options

Button Options

Choose the buttons that you want to display on the chart's customization form. End users can click the buttons to perform various actions on the chart.

Button	Name	Location	Alignment
<input checked="" type="checkbox"/> Run	<input type="text" value="Run"/>	<input type="text" value="Top"/>	<input type="text" value="Center"/>
<input checked="" type="checkbox"/> Save	<input type="text" value="Save"/>	<input type="text" value="Top"/>	<input type="text" value="Center"/>
<input type="checkbox"/> Batch	<input type="text" value="Batch"/>	<input type="text" value="Top"/>	<input type="text" value="Center"/>
<input checked="" type="checkbox"/> Reset	<input type="text" value="Reset"/>	<input type="text" value="Top"/>	<input type="text" value="Center"/>

Table A–31 Chart Personalization Form Button Options

Option	Description
Button	(Full page only) Select one or more buttons to display on the chart personalization form: <ul style="list-style-type: none">■ Run—Displays the URL portlet with the options the user has specified in the chart personalization form.■ Save—Saves users' current selections to enable them to rerun a chart using the same parameters without having to reenter them into the chart personalization form. When you include this button, the chart personalization form also displays a Reset to Defaults button that resets all values in the chart personalization form to their default values.■ Batch—Runs the URL portlet in batch mode and saves the results in the database.■ Reset—Undoes any changes made to the chart personalization form since the last Save, Reset, or Reset to Defaults event.
Name	Enter the label that will display on the selected button. Keep the name short to avoid displaying large buttons. You cannot change the label on the Reset to Defaults button.
Location	Specify the location of the button on the chart personalization form. Choose from Top , Top and Bottom , or Bottom .
Alignment	Specify the alignment of the button on the chart personalization form. Choose from Left , Center , or Right .

20. Click Next.

Table A-33 Options Available on the Additional PL/SQL Code Page

Option	Description
... before displaying the page.	Enter a PL/SQL procedure that will execute before the page containing the chart or the chart personalization form displays.
... after displaying the header.	Enter a PL/SQL procedure that will execute after the chart or the chart personalization form header displays. If you want to display output in the chart from a PL/SQL procedure, you must enter the PL/SQL in the ... after displaying the header field.
... before displaying the footer.	Enter a PL/SQL procedure that will execute before the chart or personalization form footer displays.
... after displaying the page.	Enter a PL/SQL procedure that will run after the page containing the chart or personalization form displays.

24. Click Finish.

Clicking **Finish** saves your changes and takes you to a summary page where you can test your results (Figure A-63). See "Performing Test Runs on a Portlet" for more information on testing your results.

Figure A-63 Chart Summary Page

Develop: EXAMPLE_APP.SAMPLE_CHART

Develop Manage Access ?

Close

Chart SAMPLE_CHART

Portal DB EXAMPLE_APP

Provider

Archive Version(s)

Production Version Status 1 (PRODUCTION with VALID Package)

Last Changed Friday September 16, 2005 15:46 by P101400_050915

Run Link P101400_050915_DEMO.SAMPLE_CHART.show
P101400_050915_DEMO.SAMPLE_CHART.show_parms

PL/SQL source [Package Spec](#), [Package Body](#)

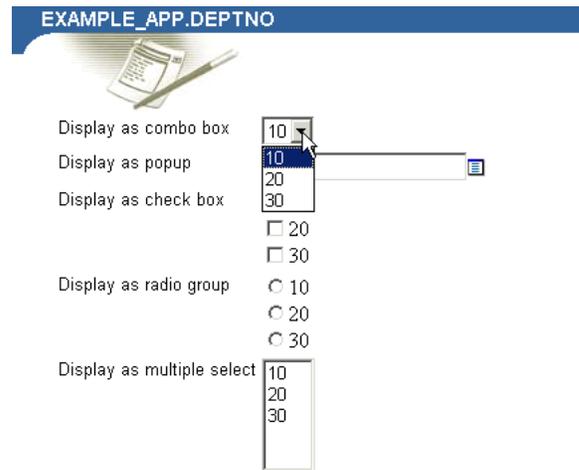
Call Interface [Show](#)

[Edit](#) [Edit as New](#) [Run](#) [Run as Portlet](#) [Personalize](#) [Add to Favorites](#) [About](#) [Delete](#)

Close

A.1.4.6 Building Lists of Values Declaratively

Figure A–64 Different Display Types for a Dynamic List of Values



When you build a list of values using the OracleAS Portal List of Values Wizard, you have the option of creating two types of lists:

- Dynamic list of values
- Static list of values

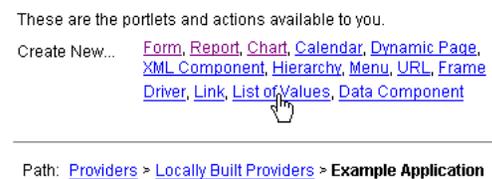
A dynamic list of values takes its content from a `SELECT` statement you build through the wizard. The content of the list may change, depending on the data that is available for selection from the source database. A static list of values takes its content from values you enter in the wizard. These values do not change unless you edit the list and specifically alter them.

This section describes how to create a dynamic list of values.

To create a dynamic list of values:

1. Follow the instructions detailed in "[Building Portlets Declaratively](#)".
Return to this section once you complete step 6.
2. Click the **List of Values** link next to **Create New...** ([Figure A–65](#)).

Figure A–65 The List of Values Link Next to Create New ...



3. On the List of Values page, click **Dynamic List of Values** ([Figure A–66](#)).

Figure A–66 The Dynamic List of Values Link

Lists of Values

Build Lists of Values that presents to the end user with a list of entry field choices in a Portal DB Provider or component. Lists of Values can be based on a static list or generated from a dynamic SQL query

[Dynamic List of Values](#)
Create a Dynamic List of Values using a SQL query that defines the list.

[Static List of Values](#)
Create a static List of Values by entering the values in a static list.

4. On the resulting page, select the Portal DB Provider that will own this list from the **Owner** drop-down list (Figure A–67).

Figure A–67 Defining List of Values Options

EXAMPLE_APP.LOV_1119165046 ?

Apply OK Cancel

Create a dynamic list of values using a SQL query to populate the list from the database. Choose the name of the Portal DB Provider that will own the list and enter a name for the list of values. Choose a format, whether to show null values, then enter a SQL query that selects two table or view columns.

Owner: EXAMPLE_APP

Name: deptno

Default Format: Pop up

Show Null Value: No

SQL Query. You can enter bind variables by prefixing them with colons (:).

```
select distinct deptno, deptno
from PTL_904099_031118_DEMO.EMP
```

Syntax:
 select [display_column], [return_column] from [table]
 where
 display_column identifies selectable values that will be displayed in the List of Values.
 return_column identifies the actual values that will be passed to the component or customization form that uses the List of Values. SQL Query.
 You can enter bind variables by prefixing them with colons (:).

5. In the **Name** field, enter a name for this list of values (Figure A–67).
This name appears on the selection list when you insert a list of values.
6. From the **Default Format** drop-down list, choose a default format for the list of values (Figure A–67).

Choose from:

- **Check box:** Each selection displays with a check box next to it. Users select or clear the box to indicate their preferred value.
- **Combo box:** Combines a pop-up list and a manual entry field. Users can either select a provided value or enter their own.
- **Pop up:** Provides a pop-up list from which users select a value.

-
- **Radio group:** Lists each selection with a radio button next to it. Users select one of the buttons to indicate their preferred value.
 - **Multiple Select:** Allow users to choose more than one value.

Note that portlet developers who add the list of values to their portlet can override this default and display the list in a different format.

7. Specify whether to show null values by selecting either **Yes**, **No**, or **%** from the **Show Null Value** drop-down list (Figure A-67).
 - When you select **Yes**, null values display as `Null` in the list of values.
 - When you select **No**, null values display as blank spaces in the list of values.
 - When you select **%**, blank spaces are also displayed. The difference between **%** and **No** is that, with **%**, when you place the list of values on a form, the null value (the wildcard **%**) is available for the set up of dynamic transactions in the form's code.
8. Enter a SQL **SELECT** statement in the **SQL Query** text box (Figure A-67).

Select two values from two table or view columns (though you can select each value from the same column):

- The first column specifies the values displayed in the list of values.
- The second column specifies the actual values that are passed to the portlet.

For example, the query `select ename, empno from scott.emp` creates a list of values that displays employee names from the `ENAME` column. It passes the employee's associated ID number (`EMPNO`) to the portlet when a user chooses a name from the list of values.

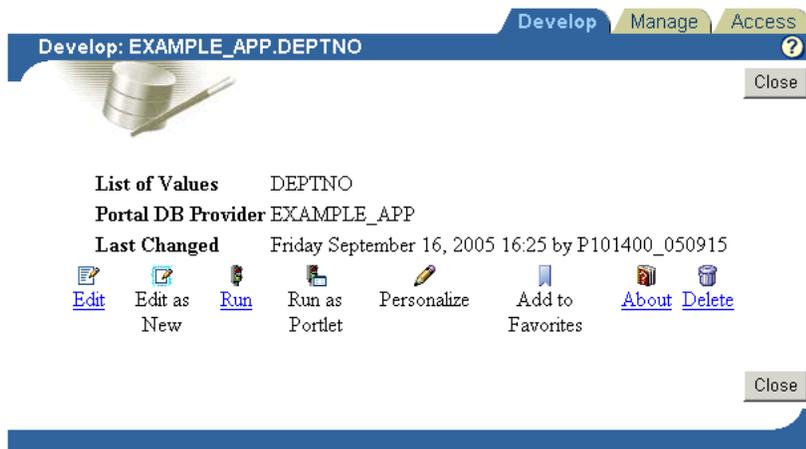
Do not end your query with a semicolon.

Note: You can enter bind variables by prefixing them with colons (:), but only if the list of values is to be used in a form portlet. Lists of values with bind variables will not work in other kinds of OracleAS Portal portlets.

In the SQL query, you can use constants for the OracleAS Portal schema and the application schema. For more information, see "[Referencing the OracleAS Portal Schema](#)".

9. Click **OK** to save your changes.

Clicking **OK** takes you to a summary page where you can manage the list of values (Figure A-68). For example, from this page, you can run the list to see the different ways it can display.

Figure A-68 List of Values Summary Page

Once you complete a list of values, it becomes available. It displays automatically on selection lists wherever you can add a list of values. For example, both the form and report personalization forms you construct with Portlet Builder wizards allow for the addition of lists of values. As you go through these wizards, you'll note that the list you created here now appears as a selection option.

A.2 Editing a Portlet Builder Component

After you build a portlet using a wizard, you can use options in the Navigator to edit it. You can edit the portlet and overwrite the current version with your changes, or you can edit the portlet as new, and create a new version of it (consequently leaving the old, original version unchanged).

Where the wizards step you through the creation of a portlet, the editor provides tabs that contain the options that were available in the wizard. Each tab corresponds to a step in the wizard that created the portlet. Entry fields on each tab contain the values that were specified during creation of the portlet, or by the user who last edited the portlet.

A portlet is locked while you edit it, preventing other users from making changes to it. The portlet remains locked until you click **OK** in the Edit page. For more information, see "[Managing Locks on Portlets](#)".

Note: To edit a portlet, you must have at least the Edit privilege on the portlet or the provider that owns it.

To edit a portlet:

1. At the top of the Portal Builder page, click the **Navigator** link.
2. Click the **Providers** tab to bring it forward.
3. Click the **Locally Built Providers** link.

The **Name** column displays the names of all the providers on which you have privileges.

4. Click the name of the OracleAS Portal database provider that contains the portlet that you want to edit.
5. Click the name of the portlet.

-
6. On the resulting page, the **Develop** tab should be selected. Click the **Edit** link at the bottom of the tab.

To leave the original version of a portlet unchanged, click the **Edit as New** link instead of **Edit**.

7. Click one or more tabs to bring them forward and edit their associated options.

The tabs contain the same options that are available in the wizards. For more information about these options, see the previous sections that cover building portlets:

- [Building Forms Declaratively](#)
- [Building Reports Declaratively](#)
- [Building Charts Declaratively](#)
- [Building Lists of Values Declaratively](#)

As you switch from tab to tab, OracleAS Portal keeps track of any changes you make. Click **OK** only after you have made all the changes on all the tabs that you want to make. If you decide you don't want to save your edits, click **Cancel**.

Note that it is important that you click either **OK** or **Cancel**. Simply closing the window will cause the component to remain locked. Special measures must be taken to unlock inappropriately locked portlets. For more information, see "[Managing Locks on Portlets](#)".

A.3 Managing Portlets

For each locally-built portlet, OracleAS Portal provides a central location from which you can perform management tasks: the management page. This section describes how to locate any locally built portlet's management page and how to perform various management tasks. It includes the following subsections:

- [Navigating to the Component Management Page](#)
- [Renaming a Portlet](#)
- [Deleting a Portlet](#)
- [Copying a Portlet](#)
- [Generating the PL/SQL Package for a Portlet](#)

Note: To rename, delete, or copy a portlet, you must have at least the Edit privilege on the provider that owns the portlet.

To generate a portlet, you must have at least the View Source privilege on the portlet or on the provider that owns it.

A.3.1 Navigating to the Component Management Page

To navigate to the component management page:

1. Click the **Navigator** link at the top of the Portal Builder page.
2. Click the **Providers** tab to bring it forward.
3. On the Providers tab, click the **Locally Built Providers** link.
4. Click the name of the Database Provider that owns the portlet you want to manage, then click the **Manage** link next to the component you will manage.

Note the three tabs on this page:

- **Develop**—Run, test, revise, delete and manage the various versions of a component.
- **Manage**—Export, copy, rename (both internal and display names), generate, and monitor the performance of the component.
- **Access**—Define security for the component within the OracleAS Portal framework. This includes publication of the component as a portlet, privilege inheritance from the provider, and cache invalidation.

A.3.2 Renaming a Portlet

To rename a portlet:

1. Navigate to the component management page for the portlet you want to rename.
For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".
2. Click the **Manage** tab to bring it forward.
3. Click the **Rename** icon.
4. Rename the internal and/or the display name for the portlet:
 - a. For the internal name, in the **New Component Name** field enter a new name for the portlet.
 - b. For the display name, in the **New Component Display Name** field enter a new display name for the portlet.
5. Click **OK**.

The portlet is renamed with the name you provided.

A.3.3 Deleting a Portlet

To delete a portlet from the database:

1. Navigate to the component management page for the portlet you want to delete.
For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".
2. Click the **Develop** tab to bring it forward.
3. Click the **Delete** icon.
The Delete Portlet page displays the versions of the portlet that you are authorized to delete.
4. Select the check box next to each version of the portlet that you want to delete.
5. Click **Yes**.

A.3.4 Copying a Portlet

To copy a portlet:

1. Navigate to the component management page for the portlet you want to copy.
For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".

-
2. Click the **Manage** tab to bring it forward.
 3. Click the **Copy** icon.
The Copy Portlet page displays.
 4. From the **New Owner** list, choose the provider that will own the new copy of the portlet.
You can choose the same provider.
 5. Provide new internal and display names for the portlet:
 - a. For the internal name, in the **New Component Name** field enter a new name for the portlet.
 - b. For the display name, in the **New Component Display Name** field enter a new display name for the portlet.
 6. Click **OK**.

A.3.5 Generating the PL/SQL Package for a Portlet

Use this feature to make sure that the portlet code compiles without errors and performs within a reasonable time. This is particularly useful if you've written more complex code than is currently supported in the portlet builder wizards. For example, you could create a package; base a form or report on the package; then, using this feature, verify that the form or report will compile.

To generate the PL/SQL package for a portlet:

1. Navigate to the component management page for the portlet with which you want to work.

For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".

2. Click the **Manage** tab to bring it forward.
3. Click the **Generate** icon.

OracleAS Portal generates the PL/SQL package using the most recent OracleAS Portal routines.

A.3.6 Viewing Source Code

OracleAS Portal stores portlets in the database as PL/SQL packaged procedures. You can view the package spec and body for the portlet as well as its call interface.

The portlet call interface displays the arguments that can be set during run time. For example, if you created a report and selected **HTML** as a **Default Format** in the Display Options step of the Report build wizard, the call interface displays **HTML** as the default value for the `_format_out` argument.

When you run the package containing the portlet in PL/SQL or by calling it from a URL, you can edit the call interface to accept different arguments. You could change the `_format_out` argument to another report output format, such as ASCII.

This section describes how to view the package spec, body, and call interface for a portlet. It includes the following subsections:

- [Viewing the Package Spec and Body for a Portlet](#)
- [Viewing the Call Interface for a Portlet](#)

Note: To view portlet source code, you must have at least the View Source privilege on the portlet or the provider that owns it.

A.3.6.1 Viewing the Package Spec and Body for a Portlet

To view the package spec and body for a portlet:

1. Navigate to the component management page for the portlet with which you want to work.

For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".

2. Click the **Develop** tab to bring it forward.
3. Click the **Package Spec** link next to **PL/SQL Source** to view the portlet's spec; click the **Package Body** link next to **PL/SQL Source** to view the body.

A.3.6.2 Viewing the Call Interface for a Portlet

To view the call interface for a portlet:

1. Navigate to the component management page for the portlet with which you want to work.

For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".

2. Click the **Develop** tab to bring it forward.
3. Click the **Show** link next to **Call Interface**.

A.3.7 Managing Locks on Portlets

A portlet lock prevents other developers from overwriting your changes while you are editing a portlet. No other developer can edit the portlet when it is locked. Portlets are locked automatically when they are being edited. You can determine who is doing the editing by taking the steps outlined in this section.

Note: To view a portlet lock or to unlock a portlet, you must have at least the Edit privilege on the portlet or the provider that owns it.

To view the name of a user who has locked a portlet:

1. Navigate to the component management page for the portlet with which you want to work.

For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".

2. Click the **Manage** tab to bring it forward.
3. Click the **Show Locks on this Component** link.

Locked portlets show a **Status** of `EDIT` on the resulting page. In addition to status, this page also lists the user responsible for the lock, the length of time the version has been locked, and other information. It also provides an **Unlock** link you can click to unlock the portlet.

The **Unlock** link is useful if a developer has edited a component, then closed the browser window without clicking **OK** or **Cancel**. In such case, the component remains locked. Use the **Unlock** link to unlock the component.

A.4 Managing Versions

OracleAS Portal enables you to store multiple versions of the same portlet in the database. Use the **Edit as New** link on the **Develop** tab (see [Section A.3.1](#)) to create a new version of the portlet that is based on the current production version. When you save your edits, you will be saving them to a new version, rather than overwriting any existing versions. The next time you edit the portlet, you can open the most current version or an earlier version of the portlet. This section describes how to access various versions of an OracleAS Portal component.

To access various versions of an OracleAS Portal component:

1. Navigate to the component management page for the portlet with which you want to work.

For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".

2. Click the **Develop** tab to bring it forward.
3. To access the production version:
 - Click the **Edit** link to make changes to the existing production version.
 - Click the **Edit as New** link to make changes to a new version that is based on the production version.

The production version is listed next to **Production Version Status** on the **Develop** tab. This field lists the production version, and indicates whether this version's code package is valid, that is, that it will run.

4. To access an archived version of the component:
 - a. Next to **Archive Version(s)**, click the x (**Archive**) version with which you want to work.

The variable value (x) stands for the archive number.

- b. On the resulting page, click **Yes** to make the selected version the production version.

Note that the version number listed next to **Production Version Status** changes to your selection.

- c. On the **Develop** tab, click the **Edit** or the **Edit as New** link to edit the newly selected production version of the component.

You can delete portlet versions from the database at any time. Follow the steps outlined in "[Deleting a Portlet](#)", then check the box next to the version(s) you want to delete, and click **Yes**. If you delete the production version and leave an archive version intact, you may want to select the archive version on the **Develop** tab and make it the production version.

The most recent version of a portlet is called the *production version*. The production version can be valid or invalid, depending on whether the database package containing the portlet will run without errors. If a portlet has a version status of (**PRODUCTION with INVALID package**), you must either generate the portlet (see [Section A.3.5](#)) or edit the portlet (see [Section A.2](#)) to fix the errors before it will run.

A.5 Managing Portlet Security

The **Actions** column of the Navigator (Figure A-69) displays the actions you may perform on a portlet. The actions listed here depend on the access privileges you have been granted on the portlet.

Figure A-69 Portlet Actions

Type ▲ ▼	Name ▲ ▼	Actions	Creator ▲ ▼	Last Modified ▲ ▼ ?
Report from SQL Query	Detail Report	Manage , Run , Edit , Delete , Grant Access , Export	PEOPLE_APP	31-MAR-2003
Hierarchies	Organization Chart	Manage , Run , Edit , Delete , Grant Access , Export	PEOPLE_APP	31-MAR-2003
Dynamic Pages	People Search	Manage , Run , Edit , Delete , Grant Access , Export	PEOPLE_APP	31-MAR-2003
Report from SQL Query	People Search Report	Manage , Run , Edit , Delete , Grant Access , Export	PEOPLE_APP	31-MAR-2003
Report from SQL Query	Person Details	Manage , Run , Edit , Delete , Grant Access , Export	PEOPLE_APP	31-MAR-2003
Link from Wizard	ORG_LINK	Manage , Run , Edit , Delete , Grant Access , Export	PEOPLE_APP	31-MAR-2003

By default, you have the *Manage* privilege on any portlet you create. The Manage privilege provides the highest level of access. This means you can run, edit, delete, or export the portlet. You can also grant access privileges to another user on any portlet that you create.

To build a portlet within OracleAS Portal, you must have at least the *Edit* privilege on the provider that will own the finished portlet. By default, portlets inherit whatever privileges are assigned to the provider that owns them. For example, after a component is created in the MY_APP provider, all developers with at least the *Execute* privilege on MY_APP can run the component after it is published as a portlet. Portlet owners can override these privileges and set access on a user-by-user level, rather than at the provider level.

Table A-34 lists the actions available for portlets and indicates which privileges enable a user to perform those actions.

Table A-34 Portlet Actions Associated with Portlet Privilege Levels

Action	Manage	Edit	View Source	Personalize	Execute
Grant portlet privileges to other users	X				
Manage portlet locks	X	X			
Edit any portlet version	X	X			
Delete the portlet from the database	X	X			
Rename the portlet	X	X			
Export the portlet to another database	X	X			
Copy the portlet	X	X			
Generate the portlet PL/SQL package	X	X	X		
Monitor portlet usage	X	X	X		

Table A–34 (Cont.) Portlet Actions Associated with Portlet Privilege Levels

Action	Manage	Edit	View Source	Personalize	Execute
View portlet's call interface, package spec, and body	X	X	X		
Personalize the portlet	X	X	X	X	
Run the portlet	X	X	X	X	X
Add the portlet to the Favorites list	X	X	X	X	X

A.5.1 Granting Portlet Access Privileges

Note: To grant access privileges on a portlet to other users or groups, you must have at least the *Manage* privilege on the portlet or the provider that owns it.

You can define access to your portlet at the provider level and at the portlet level. This section describes how to inherit provider access privileges or override them by setting privileges at the portlet level. It contains the following subsections:

- [Inheriting Portlet Access Privileges from a Provider](#)
- [Granting Access Privileges to Individual Users](#)

A.5.1.1 Inheriting Portlet Access Privileges from a Provider

By default, access to your portlet is inherited from the provider that owns it. For example, all users who have the *Execute* privilege on the owning provider are automatically able to execute your portlet. Users with the *Edit provider* privilege can edit all the portlets owned by the provider, and so forth. You can set provider access through the **Grants** tab (for more information, see ["Granting and Revoking Privileges on Database Objects"](#)). On the **Grants** tab, you can grant different privileges to different groups of users. Once privileges on the provider are established, you can specify that any portlets created under the provider must inherit the same set of privileges. This section describes how to specify that portlets should inherit privileges granted to their host providers.

Note: Before you can publish Portlet Builder components as portlets, the host provider must be exposed to OracleAS Portal as a provider. For information on how to enable this setting, see ["Exposing a Provider"](#).

To inherit portlet access privileges from a provider:

1. Click the **Navigator** link at the top of the Portal Builder page.
2. Click the **Providers** tab to bring it forward.
3. Click the **Locally Built Providers** link.
4. Click the name of the Database Provider that contains the portlet on which you want to grant access privileges.

5. Click the **Manage** link next to the relevant portlet.
The Manage page displays.
6. Click the **Access** tab.
7. Select the **Inherit Privileges from Provider** check box.
Portlet access will be defined by the portlet's host provider.

A.5.1.2 Granting Access Privileges to Individual Users

You can override the default access privileges (that is, those granted through the provider) by setting them at the portlet level. This section describes how to set access privileges at the portlet level, allowing you to more specifically target privileges to individual users.

To grant access privileges to individual users:

1. Click the **Navigator** link at the top of the Portal Builder page.
2. Click the **Providers** tab to bring it forward.
3. Click the **Locally Built Providers** link.
4. Click the name of the Database Provider that contains the portlet on which you want to grant access privileges.
5. Click the **Manage** link next to the relevant portlet.
The Manage page displays.
6. Click the **Access** tab.
7. Clear the **Inherit Privileges from Provider** check box, then click **Apply**.
The Access page displays two new sections: Grant Access and Change Access.
8. In the **Grantee** field, enter the name of the user or group to whom you want to grant privileges.
If you are not sure of the name of the user or group click the Browse Users or Browse Groups icon and select from the list provided.
9. From the privilege list, choose an access privilege to grant to the user or group.
See [Table A-34](#) for information on the actions allowed with different access privileges.
10. Click **Add**.
The user or group you entered in the **Grantee** field displays along with the access privilege you granted in the Change Access section at the bottom of the page.

Note: OracleAS Portal uses the Oracle Internet Directory for identity management, serving as the repository for users and groups. In Oracle Internet Directory, groups are uniquely identified by their distinguished name (DN). Each group has a unique DN, though many groups can share a common name, in the same way that two people can share a common name, yet have completely different lineage (that is, John Smith and John Doe). When working within the portal, groups created from within that portal are displayed simply with their common names. However, when the portal references a group from some other location in the Oracle Internet Directory—such as a group from some other portal associated with the same Identity Management Infrastructure—the DN of the group is displayed to distinguish it from the portal’s locally defined groups.

11. (Optional) To modify a user or group’s access privilege, choose a new privilege next to the user or group in the Change Access section.
12. (Optional) To remove all privileges, click the Delete icon next to the user or group in the Change Access section.
13. Click **Apply**.
14. Click **Close** to exit the Manage page and return to the Portal Navigator.

A.6 Performing Test Runs on a Portlet

After you create a component under a Portal DB Provider, you will likely want to test whether it runs to your satisfaction and make edits to it if it does not. All of this functionality is available to you through the **Develop** tab on the Manage page. From this tab, you can run a component as a full page, as a portlet, and through the component’s personalization form.

You also have the option of running the component as a portlet through the portlet personalization form. But this option is not available on the Develop tab. To do this, you must first publish the component as a portlet, place the portlet on a page, then click the **Personalize** link in the portlet header.

This section discusses how to run a component using these various methods. It includes the following subsections:

- [Running a Component as a Full Page](#)
- [Running a Component as a Portlet](#)
- [Running a Component through the Personalization Form](#)
- [Running the Component as a Portlet through the Portlet Personalization Form](#)

Note: To run a portlet, you must have at least the Execute privilege on the portlet or the provider that owns it. You must also ensure that the **Publish as Portlet** check box is selected on the **Access** tab of the Manage page.

You can run a portlet only if there is a valid portlet version. See ["Managing Versions"](#) for more information.

A.6.1 Running a Component as a Full Page

To run a component as a full page:

1. Click the **Navigator** link at the top of the Portal Builder page.
2. Click the **Providers** tab to bring it forward.
3. Click the **Locally Built Providers** link.
4. Click the name of the Database Provider that owns the portlet.
5. Click the **Manage** link next to the component you want to run.

The **Develop** tab of the Manage page displays.

6. Click **Run**.

The component displays in a separate window on a full Web page.

A.6.2 Running a Component as a Portlet

To run a component as a portlet:

1. Click the **Navigator** link at the top of the Portal Builder page.
2. Click the **Providers** tab to bring it forward.
3. Click the **Locally Built Providers** link.
4. Click the name of the Database Provider that owns the portlet.
5. Click the **Manage** link next to the component you want to run.

The **Develop** tab of the Manage page displays.

6. Click **Run as Portlet**.

The portlet displays in a separate browser window in a smaller-than-full-page format.

A.6.3 Running a Component through the Personalization Form

To run a component through the full page personalization form:

1. Click the **Navigator** link at the top of the Portal Builder page.
2. Click the **Providers** tab to bring it forward.
3. Click the **Locally Built Providers** link.
4. Click the name of the Database Provider that owns the portlet.
5. Click the **Manage** link next to the component you want to run.

The **Develop** tab of the Manage page displays.

6. Click **Personalize**.

The personalization form displays.

7. Personalize your settings and click the **Run** button.

The component displays in a separate browser window on a full Web page.

A.6.4 Running the Component as a Portlet through the Portlet Personalization Form

To run a component as a portlet through the portlet personalization form:

-
1. Publish the component as a portlet:
 - a. Click the **Navigator** link at the top of the Portal Builder page.
 - b. Click the **Providers** tab to bring it forward.
 - c. Click the **Locally Built Providers** link.
 - d. Click the **Database Provider** that owns the component with which you want to work.
 - e. Click the **Manage** link next to the portlet with which you want to work.
 - f. On the Manage page, click the **Access** tab to bring it forward.
 - g. Under the **Portal Access** heading, verify that **Publish as Portlet** is selected.

Note: The **Publish As Portlet** check box is available only when the provider has been configured appropriately. For more information, see "[Exposing a Provider](#)".

- h. Click **Close** to save your change and return to the Portal Navigator.
2. Add the portlet to a page:
 - a. Go to the page where you want to place the portlet.
 - b. Click the **Edit** link at the top of the page.
 - c. Go to a portlet region on the page.
 - d. Click the Add Portlet icon.
 - e. Enter the portlet's display name in the Portlet Repository's **Search** field, and click **Go**.

If you do not remember the exact name, you can drill to the portlet's location within the Portlet Repository. Typically, you'll find newly-created portlets under the **Portlet Staging Area** node. Click the node, then click the portlet's host provider name.
 - f. Click the portlet to add it to the **Selected Portlets** list.
 - g. Click **OK** to add the portlet and return the page where you have placed it.
3. Click the **Personalize** link in the portlet header.

If this link does not display, edit the host region's properties to include it (in Page Edit mode, click the Edit Region icon at the top of the region).
4. Personalize your settings and click **OK**.

The portlet displays with your personalizations.

A.6.5 Running in Batch Mode

Developers can add a Batch button to a personalization form that enables end users to run the component in batch mode. Batch mode is asynchronous, allowing users to run a transaction in the background, freeing their systems for other tasks. You can place a Batch button on the personalization forms for charts and reports. Batch processing is useful if the component is based on a large amount of data, or if you anticipate that the portlet will display many rows of data.

When you execute a job in batch mode, OracleAS Portal displays a page indicating that the job was submitted to the batch queue, and provides a number for identifying the job.

This section provides information on how to add the Batch button to an existing component, and the parameters that should be pre-set by the database administrator in the `init.ora` file to enable batch processing. It includes the following subsections:

- [Setting init.ora Parameters for Batch Jobs](#)
- [Adding a Batch Button to an Existing Component](#)

A.6.5.1 Setting init.ora Parameters for Batch Jobs

To enable end users to execute jobs in batch mode, the database administrator should review the parameters in the `init.ora` file for the Oracle database where OracleAS Portal is installed. If these parameters are not set correctly, even though batch jobs may be sent to the batch queue, they may not run.

[Table A-35](#) provides some suggested settings:

Table A-35 Suggested Batch-Handling Settings for the init.ora File

<code>init.ora</code> Parameter and Setting	Specifies
<code>job_queue_processes=2</code>	Two background processes.
<code>job_queue_intervals=60</code>	The processes wake up every 60 seconds.
<code>job_queue_keep_connections=TRUE</code>	Sleep, don't disconnect.

A.6.5.2 Adding a Batch Button to an Existing Component

To add a Batch button to an existing component:

1. Navigate to the component management page for the portlet you will work with.
For information on how to navigate to this page, see "[Navigating to the Component Management Page](#)".
2. If necessary, click the **Develop** tab to bring it forward.
3. Click the **Edit** link at the bottom of the tab.
4. Click the **Personalization Form Display Options** tab to bring it forward.
5. Scroll to the Button Options section at the bottom of the tab.
6. Select the check box next to **Batch**.
7. Optionally, set the **Batch** button's display options:
 - a. Enter a display name for the **Batch** button.
The default is **Batch**.
 - b. Specify the location for the button.
Choose from **Top**, **Top and Bottom**, and **Bottom**. **Top** is the default.
 - c. Specify button alignment.
Choose from **Center**, **Left**, or **Right**. **Center** is the default.
8. Click **OK** to save your changes and return to the Manage page.
9. Click **Close** to return to the Portal Navigator.

A.7 Referencing the OracleAS Portal Schema

To make the import and export of applications more robust, wherever you can use PL/SQL code, you can use constants in place of the names of the OracleAS Portal Schema, the application schema, and the application name. Table A-36 lists the components that can use these constants and the places where they can be used within the Portlet Builder.

Table A-36 Constants for Applications and Schemas for Portlet Builder Components

Component	Constants	Places to Use in the Portlet Builder
Reports	#APP_SCHEMA#	▪ SQL query
	#PORTAL_SCHEMA#	▪ Table Name (#APP_SCHEMA#, #PORTAL_SCHEMA#)
	#APP_NAME#	▪ Advanced PL/SQL section ▪ LOV Name (#APP_NAME#)
Charts	#APP_SCHEMA#	▪ SQL query
	#PORTAL_SCHEMA#	▪ Table Name (#APP_SCHEMA#, #PORTAL_SCHEMA#)
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
Calendars	#APP_SCHEMA#	▪ SQL query
	#PORTAL_SCHEMA#	▪ Advanced PL/SQL section
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
Forms	#APP_SCHEMA#	▪ Table Name (#APP_SCHEMA#, #PORTAL_SCHEMA#)
	#PORTAL_SCHEMA#	▪ Advanced PL/SQL section
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
Dynamic Page	#APP_SCHEMA#	▪ SQL query
	#PORTAL_SCHEMA#	▪ Advanced PL/SQL section
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
XML	#APP_SCHEMA#	▪ SQL query
	#PORTAL_SCHEMA#	▪ Advanced PL/SQL section
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
Hierarchy	#APP_SCHEMA#	▪ Table Name (#APP_SCHEMA#, #PORTAL_SCHEMA#)
	#PORTAL_SCHEMA#	▪ Advanced PL/SQL section
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
Frame Driver	#APP_SCHEMA#	▪ SQL query
	#PORTAL_SCHEMA#	▪ Advanced PL/SQL section
	#APP_NAME#	▪ LOV Name (#APP_NAME#)
Links	#APP_SCHEMA# #PORTAL_SCHEMA#	Component Name
LOV	#APP_SCHEMA# #PORTAL_SCHEMA#	SQL query

These constants should be replaced by the caller at runtime, that is, passed as a parameter to the component when the component is run. When you edit a component

in the Portlet Builder, any constants you have used should still appear "as is," that is, as #APP_SCHEMA# or whatever constant you used.

[Table A-37](#) provides some examples of how you can use these constants.

Table A-37 Examples of the Use of Constants

Location in Portlet Builder	Examples
SQL Query	<pre>Select * from #app_schema#.emp; Select * from #portal_schema#.emp; Select #app_name# from #portal_schema#.emp;</pre>
Advanced PL/SQL Section	<pre>Htp.p('#APP_NAME#'); Htp.p('#APP_SCHEMA#'); Htp.p('#PORTAL_SCHEMA#'); Select * from #app_schema#.emp; Select * from #portal_schema#.emp; Select #app_name# from #portal_schema#.emp;</pre>
LOV Name	#APP_NAME#.dept_lov
Table Name	#APP_SCHEMA#.EMP #PORTAL_SCHEMA#.DEPT

A.8 Coding Additional Functionality

The data for OracleAS Portal components is fetched from a database through the use of a SQL query. When you build charts and reports, you can write your own SQL query or use a build wizard to generate it for you. When you build a calendar or frame driver, you must write your own SQL query.

Charts, calendars, and hierarchies all require OracleAS Portal-specific syntax in the SQL statement that creates these portlets. For example, you must identify in the chart SQL statement a table or view column that supplies labels for the chart. You also identify a column that contains numeric data to determine the size of chart bars. The wizards for building charts and other types of components guide you through the specification of any special syntax.

You can also specify hyperlinks in the SQL query. These links jump from column values that are displayed in the component to other components or Web pages. For example, you can link employee names on a department chart to individual reports containing information about each employee on the chart.

This section explores some of the ways you can build additional functionality into your locally built components. It includes the following subsections:

- [Using Bind Variables](#)
- [Writing Event Handlers for Items on Forms](#)
- [Using PL/SQL to Get and Set Values in a Form](#)
- [Using PL/SQL to Get or Set Cookies in a Form or Report](#)
- [Defining Values through Page Parameters](#)

A.8.1 Using Bind Variables

You can add bind variables to the SQL query that enables the locally built component to accept user input from a personalization form. Each bind variable corresponds to a column in the table or view on which the component is based. They each create an entry field in the personalization form for the portlet. The user can then choose which data to display in the component.

Note: You can also set up bind variables declaratively, through wizards. For an example of how to do this as well as for additional information on how to map the variable to a page parameter, see ["Defining Values through Page Parameters"](#).

A bind variable appears in a SQL query as an alphanumeric string preceded by a colon (:var1, :var2, :var3, and so on). For example, the following SQL query creates entry fields for the SALARY and DEPT columns of the SCOTT.EMP table:

```
select ename, sal, dept
from scott.emp
where sal = :salary and deptno like :dept
```

Entering this SQL query creates a personalization form with two text entry fields. The first enables the user to select a salary. The second field selects a department number. OracleAS Portal uses the values that the user types in the personalization form entry fields to create the output.

You do not need to know SQL to specify bind variables. You can identify columns that will accept parameters in the **Column** field in the **Personalization Form Display Options** step of several portlet build wizards.

A.8.2 Writing Event Handlers for Items on Forms

You can code JavaScript and PL/SQL event handlers to personalize the layout and operation of items on forms. An in-depth knowledge of JavaScript and PL/SQL is required to successfully include event handlers in your forms.

- You can use JavaScript event handlers to personalize the behavior of form items, such as buttons, check boxes, lists, text boxes, and the like. Your browser must support the JavaScript version you use.
- You can use PL/SQL event handlers to personalize the behavior of buttons.

If you code both JavaScript and PL/SQL event handlers for the same button, be careful to avoid potential conflicts between the execution of the two scripts.

Refer to your JavaScript or PL/SQL documentation for descriptions of the events that are available to you in OracleAS Portal.

This section describes how to add event handlers through the portlet build wizards. It includes the following subsections:

- [Writing a JavaScript Event Handler for an Item on a Form](#)
- [Writing a PL/SQL Event Handler for a Button on a Form](#)

A.8.2.1 Writing a JavaScript Event Handler for an Item on a Form

To write a JavaScript event handler for an item on a form:

1. Edit the form that includes the item for which you want to write an event handler:

- a. Go to the Manage page for the relevant form component.
For information on navigating to this page, see "[Navigating to the Component Management Page](#)".
- b. If necessary, click the **Develop** tab to bring it forward.
- c. Click the **Edit** link toward the bottom of the tab.
2. Click the Formatting and Validation Options icon to bring that tab forward.
3. In the left frame, click the name of the item for which you want to write a JavaScript event handler.
4. In the right frame, scroll to the **JavaScript Event Handlers** section.
5. From the **JavaScript Event Handlers** list, choose the required event, and enter the JavaScript to be executed when the event occurs.

Example A–1 Converting a Value to Uppercase

To convert a value in a text box or text area input field to uppercase whenever the field loses focus, choose the onBlur event and enter the following JavaScript:

```
this.value = this.value.toUpperCase();
```

Example A–2 Confirming Submission of a Form

To add a confirmation when the end user clicks a button before submitting a form, choose the onClick event and enter the following JavaScript:

```
return confirm('Are you sure you want to submit the form?');
```

This displays a prompt dialog where the end user can click OK or Cancel; clicking OK submits the form.

Example A–3 Checking the Data Type of a Value

To verify that a value entered by the end user is a number only, choose the onChange event and enter the following JavaScript:

```
if (isNaN(this.value)) {  
  alert('Please enter a valid number.');
```

A.8.2.2 Writing a PL/SQL Event Handler for a Button on a Form

To write a PL/SQL event handler for a button on a form:

1. Edit the form that includes the button for which you want to write an event handler:
 - a. Go to the Manage page for the relevant form component.
For information on navigating to this page, see "[Navigating to the Component Management Page](#)".
 - b. If necessary, click the **Develop** tab to bring it forward.
 - c. Click the **Edit** link toward the bottom of the tab.
2. Click the Formatting and Validation Options icon to bring that tab forward.
3. In the left frame, click the name of the button for which you want to write a PL/SQL event handler.

-
4. In the right frame, scroll to the **PL/SQL Button Event Handler** section.
 5. Define either:
 - A pre-defined event: Choose an event for the button from the **PL/SQL Button Event Handler** list.
 - A custom event: Choose **Custom** from the **PL/SQL Button Event Handler** list, and type the associated PL/SQL code.

A.8.3 Using PL/SQL to Get and Set Values in a Form

You can access and modify form field values using the methods of the form's session storage object contained in the variable `p_session`. To get a value, you must use type-specific get methods on `p_session`. This `p_session` has the following get functions for the data types NUMBER, VARCHAR2, and DATE:

- `get_value_as_NUMBER`
- `get_value_as_VARCHAR2`
- `get_value_as_DATE`

You must provide the block name and attribute name as arguments to these functions. For a single-block form, the block name is `DEFAULT`. For a master-detail form, the block name is `MASTER_BLOCK` or `DETAIL_BLOCK`.

For the detail block, you must also provide the row index. The attribute name is the column name prefixed by `A_`.

To get the value of `DEPTNO` in a single block form, you would code:

```
declare
    my_deptno number;
begin
    my_deptno := p_session.get_value_as_NUMBER(
        p_block_name => 'DEFAULT',
        p_attribute_name => 'A_DEPTNO');
end;
```

For example, if you're doing this in the third record of a detail block, use:

```
my_deptno := p_session.get_value_as_NUMBER(
    p_block_name => 'DETAIL_BLOCK',
    p_attribute_name => 'A_DEPTNO',
    p_index => 3);
```

To set a field value, use `p_session.set_value`. This `p_session.set_value` function takes the same arguments as the `get_value` functions, with the addition of `p_value` for specifying the value (`p_value` is overloaded for any data type). Here, `set_value` is a procedure, and does not return a value. For example, to set the value of `DEPTNO`, use:

```
p_session.set_value(
    p_block_name => 'DEFAULT',
    p_attribute_name => 'A_DEPTNO',
    p_value => '20');
```

You can use the session storage object (`p_session`) in any button event handler and in the following places in the **Advanced PL/SQL** step of the Forms wizard (see also [Table A-6](#)):

- Before page

- After page
- Before processing
- After processing

Note that the Before form and After form handlers do not have access to the session storage object.

If you define custom code for a button mapped to an Insert, Update, or Delete event, you must call the procedure `doInsert`, `doUpdate`, or `doDelete` at an appropriate place in your code to perform the button's default function. For example, if you programmatically set a field value in an Insert button, call `doInsert` after `p_session.set_value` to perform the insert into the table.

A.8.4 Using PL/SQL to Get or Set Cookies in a Form or Report

When you use PL/SQL in OracleAS Portal, you have access to a variety of packages that are part of the PL/SQL Gateway. The gateway is delivered as part of OracleAS Portal. One of these is the package `owa_cookie`.

This package contains data types, procedures, and functions that enable you to send HTTP cookies to and get them from the client's browser. HTTP cookies are opaque strings sent to the browser to maintain state between HTTP calls. State can be maintained throughout the client's session—longer if an expiration date is included.

Maintaining a state means that the client can be identified throughout a session, allowing for the execution of transactions. So, for example, shopping applications can store information about currently-selected items; for-fee services can send back registration information, freeing the client from retyping a user ID on the next connection; and sites can store per-user preferences on the client, and in turn, have those clients supply those preferences every time it reconnects to that site.

The `owa_cookie` package contains subprograms and data types that you can use to set and get cookie values. [Table A-38](#) lists some `owa_cookie` subprograms and data types, and describes how each is used.

Table A-38 *owa_cookie* Subprograms and Data Types

Subprogram or Data Type	Used to
<code>owa_cookie.cookie</code> data type	Contain cookie name-value pairs
<code>owa_cookie.get</code> function	Get the value of the specified cookie
<code>owa_cookie.get_all</code> procedure	Get all cookie name-value pairs
<code>owa_cookie.remove</code> procedure	Remove the specified cookie
<code>owa_cookie.send</code> procedure	Generate a "Set-Cookie" line in the HTTP header

Sessions are used by the Web Request Broker to maintain persistent states within gateways through multiple accesses over a period of time. Since the PL/SQL Gateway is unique in connecting to the database and all the states are maintained within the database, the concept of *sessions* does not apply to the PL/SQL Gateway. Instead, cookies can be used to maintain persistent state variables from the client browser.

A.8.5 Defining Values through Page Parameters

For many components, you can set values for columns using page parameters. To do this, you need to:

- Indicate that a column is customizable in the component's Personalization Form Display Options page.
- Enable parameters for the page group that will host the component.
- Add a page parameter to the page that will host the component.
- Map the page parameter to the portlet parameter.

This section provides a brief overview of this process. We'll add a customizable value—a parameter or bind variable—to a report and map that parameter to the page that will host the portlet component.

Note: This procedure explains how to set a parameter for a report portlet that displays directly on a page. If you include the report portlet as a link (click **Edit Region**; on the **Attributes** tab, select the **Display Name Link** attribute; click the **Actions** icon, then **Edit Portlet Instance** link, and check **Link That Displays Item In New Browser Window**), the parameter attached has no effect when end users click the link to display the report: the result shown is no rows displayed.

To set up a parameter and use it on a portal page:

1. Create a report as described in "[Building Reports Declaratively](#)".
2. When you reach the step covering **Personalization Form Display Options**, select the **Value Required** check box, choose a column, assign a prompt to it, and make it public ([Figure A-70](#)).

Figure A-70 Report Personalization Form Display Options

Personalization Form Display Options

Choose the parameters that you want to display on the report's personalization form. For each parameter you choose, an entry field appears on the personalization form that enables end users to choose their own conditions for displaying data in the report. Check **Value Required** if you want to require the end user to enter a value in the parameter entry field.

Value Required	Column Name	Prompt	LOV	Display LOV As	Make Public
<input checked="" type="checkbox"/>	EMP.DEPTNO	Deptno			<input checked="" type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

[More Parameters](#)

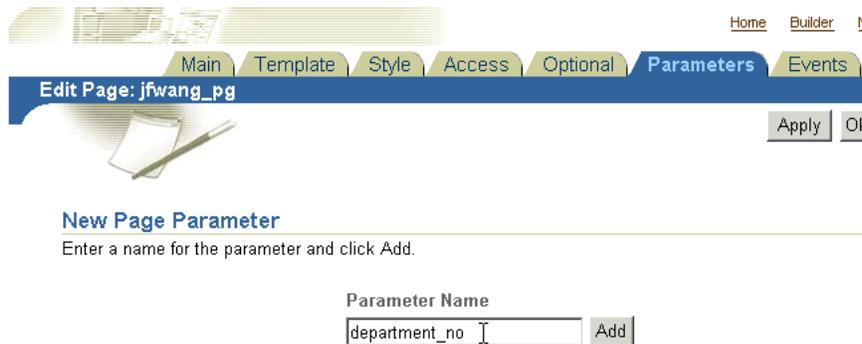
3. Complete the creation of your report.
4. Go to the Page Groups portlet (typically, on the **Build** tab of the Portal Builder.)
5. In the **Page Group** field, select the page group that will host the report and click the **Edit** button to edit the page group's properties.
6. Click the **Configure** tab to bring it forward, and scroll down to the **Parameters and Events** section of the tab.
7. Click the **Edit** link.
8. Select the **Enable Parameters and Events** check box.
9. Click **OK**, then click **Close**.

10. In the Page Groups portlet, click the Browse icon next to the **Name** field under **Edit a Page**.
11. In the resulting secondary window, drill to the page on which you want to place the portlet, and click the **Return Object** link next to it.
12. Click the **Edit** button next to the now-populated **Name** field.
13. Add the new report portlet to the page:
 - a. Click the Add Portlet icon over a region.
 - b. In the Portlet Repository, click the **Portlet Staging Area** node.
 - c. Click the name of the provider that owns the portlet.
 - d. Click the portlet to add it to the **Selected Portlets** list.
 - e. Click **OK** to return to the host page.

The portlet will display with the following error message: Error: Required field not set yet - emp.deptno (WWV-14900). Once you define the page parameter and wire it to the portlet parameter you can provide a value, and this message will no longer display.

14. In the page tool bar at the top of the page, click the **Page: Properties** link.
15. On the resulting page, click the **Parameters** tab to bring it forward.
This tab displays only when parameters and events are enabled for the page's page group.
16. In the **Parameter Name** field, enter a name for the page parameter you will wire to the parameter (bind variable) you created for your component (Figure A-71).

Figure A-71 The Parameter Name Field on the Parameters tab



17. Click **Add**.
18. Optionally, go to the **Page Parameter Properties** section and configure the parameter (Figure A-72):
 - a. Enter a display name, which identifies the parameter to other users.
 - b. Enter a default value.
 - c. Select whether to allow users to change the value of the parameter when they personalize the page.
 - d. Enter a description of the parameter.

Figure A-72 Defining Page Parameter Properties

Page Parameter Properties

Enter a display name, default value, and a description for each parameter. Decide whether to allow users to change the value of each parameter when they personalize the page. You may also delete parameters, or change the order in which they are displayed when users personalize the page.

Name	Display Name	Default Value	Personalizable	Description
✘ department_no	department_no	20	<input checked="" type="checkbox"/>	

19. Go to the **Portlet Parameter Values** section, and expand the node next to the portlet you added to the page in Step 13 (Figure A-73).

Figure A-73 Expanding a Portlet Node under Portlet Parameter Values

Portlet Parameter Values

Expand a portlet to view its parameters and specify how to set the values of those parameters. You can map portlet parameters to page parameters, system variables, or constant values.

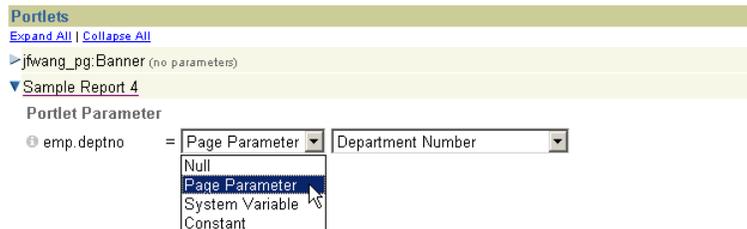


20. From the drop-down list next to your portlet parameter, select **Page Parameter** (Figure A-74).

Figure A-74 Selecting the Type of Mapping to Use with a Portlet Parameter

Portlet Parameter Values

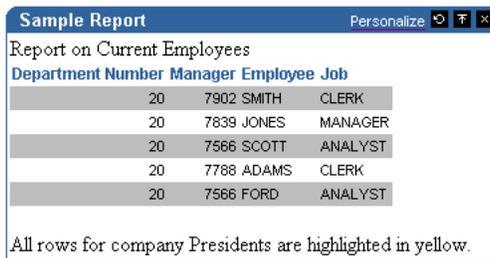
Expand a portlet to view its parameters and specify how to set the values of those parameters. You can map portlet parameters to page parameters, system variables, or constant values.



21. By default, the next drop-down list should display the relevant page parameter display name. If it doesn't, select the relevant name from the list (in our example, the relevant display name is **Department Number**).

This maps the parameter you defined for your portlet (on the Personalization Form Display Options page) to the parameter you have defined for the page (on the Parameters tab).

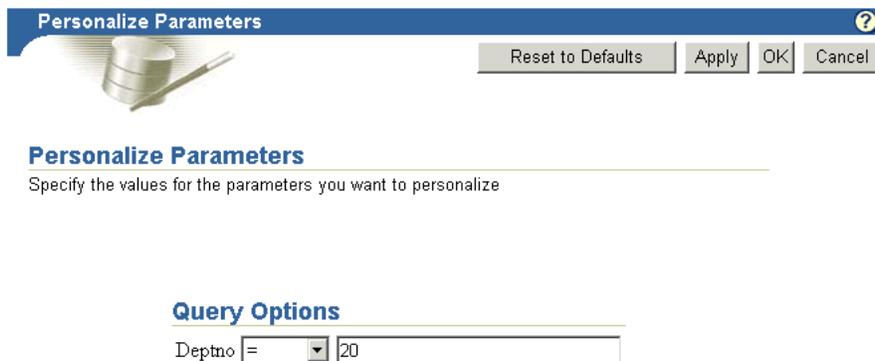
22. Click **OK**.
23. If you provided a default value for the page parameter in Step 18b, the report portlet will display with results relevant to the parameter, for example, with results for the specified department number (Figure A-75).

Figure A-75 Report Results for Department 20


Department Number	Manager	Employee	Job
20	7902	SMITH	CLERK
20	7839	JONES	MANAGER
20	7566	SCOTT	ANALYST
20	7788	ADAMS	CLERK
20	7566	FORD	ANALYST

All rows for company Presidents are highlighted in yellow.

If you did not provide a default value, you can provide one by clicking the **Personalize** link in the portlet header (if the parameter was made customizable in Step 18c) and providing a value under Query Options ([Figure A-76](#)).

Figure A-76 Personalizing Page and Portlet Parameter Values


Personalize Parameters

Reset to Defaults Apply OK Cancel

Personalize Parameters
Specify the values for the parameters you want to personalize

Query Options

Deptno =

A.9 Using Shared Components to Create a Look and Feel

Each portlet build wizard contains options that enable you to define a look and feel for the portlet's content. For example, you can choose the colors of the rows in a report; the font type, color, and size for chart labels; and the height, width, and order of entry fields in a form. In addition to its built-in look-and-feel capabilities, OracleAS Portal offers advanced features through the Shared Components provider for the creation of a more personalized look and feel.

Through the Shared Components provider, you can build JavaScripts for use in your wizard-built forms; define custom colors, fonts, and images; and apply User Interface Templates to portlets.

The Shared Components provider is located in the Portal Navigator on the Providers tab under Locally Built Providers.

OracleAS Portal includes a default set of shared components. These are *system* type components. The components you develop yourself under the Shared Components provider are *user* type components. You can edit, export, and delete a user-type shared component, but not a system-type. To edit a system type, you must first copy it, then edit the copy.

This section explores the capabilities of the Shared Components provider and describes how to put them to use. It includes the following subsections:

- [Granting Access to Shared Components](#)
- [Using JavaScript to Create Field- and Form-Level Validation](#)

- [Creating Color Definitions](#)
- [Creating Image Definitions](#)
- [Creating Font Definitions](#)
- [Using User Interface Templates](#)

A.9.1 Granting Access to Shared Components

Access privileges to the Shared Components provider define the actions you can perform on shared components. [Table A-39](#) lists and describes the access privileges that are relevant to the Shared Components provider:

Table A-39 Shared Components Provider Access Privileges

Access Privilege	Enables You to
Manage	<ul style="list-style-type: none"> ■ Grant shared component access privileges to other users or groups. ■ Create a new shared component. ■ Copy a System type shared component to create a new User type. ■ Edit any User type shared component. ■ Delete any User type shared component. ■ Export any User type shared component to another schema or database.
Create	<ul style="list-style-type: none"> ■ Create a new shared component. ■ Copy a System type shared component to create a new User type.

By default, all users who are members of the DBA or PORTAL_DEVELOPERS groups have Manage shared component access privileges.

Access privileges are granted for all shared components. Access privileges cannot be granted on a shared component type, such as all JavaScripts, nor on an individual shared component, such as a particular JavaScript. Access must be granted to all shared components or none of them.

To grant access privileges to the Shared Components provider to a user or group:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. In the **Actions** column for the Shared Components provider, click the **Grant Access** link.
4. In the **Grantee** field, enter the name of the user or group that you want to allow to access the shared components.

Optionally, click the Browse Users or Browse Groups icon and select from the list provided.

5. Choose the level of access to grant to the user or group from the list of available privileges.

See [Table A-39](#) for a list of relevant privileges.

6. Click **Add**.

The user or group you specified now appears in the Change Access section at the bottom of the page.

7. (Optional) To modify an access privilege, choose a new privilege next to the user or group in the Change Access section.
8. (Optional) To remove a privileges, click the Delete icon next to the user or group in the Change Access section.
9. Click OK.

A.9.2 Using JavaScript to Create Field- and Form-Level Validation

OracleAS Portal provides tools for you to create JavaScripts that perform field- and form-level validation on entry fields in forms. Field-level validation is performed when the end user causes the onBlur condition to occur after entering a value in an entry field, for example, when tabbing to another entry field. Form-level validation occurs after the user enters a value in an entry field and submits all values on the page, for example, when clicking an OK button.

This section provides a few guidelines for using JavaScript to build field- or form-level validation in a form and describes how to create and add JavaScript to your form. It contains the following subsections:

- [Guidelines for Writing Field- or Form-Level Validation JavaScript](#)
- [Creating JavaScript under the Shared Components Provider](#)
- [Adding JavaScript to a Form](#)

A.9.2.1 Guidelines for Writing Field- or Form-Level Validation JavaScript

Follow these guidelines when writing a field- or form-level validation JavaScript:

Note: You must have at least the Create shared component access privilege to create a JavaScript.

You must have the Manage shared component access privilege to edit a JavaScript.

- All validation routines should be written as functions and return either TRUE or FALSE values.
- The routine should display an alert message to users if the element (entry field) being validated contains an invalid value.
- The routine should bring focus (position the cursor) to the entry field where the user entered the incorrect value flagged by the JavaScript.

[Example A-4](#) demonstrates the use of JavaScript to perform field-level validation.

Example A-4 Example JavaScript

```
1-> function isNumber(theElement)
    {
2->     if (isNaN(Math.abs(theElement.value)))
        {
3->         alert("Value must be a number.");
4->         theElement.focus();
           return false;
        }
    }
```

```
        return true;
    }
```

The JavaScript presented in [Example A-4](#) performs field-level validation tasks in the following sequence:

1. Identifies the name of the function and the entry field being validated.
2. Checks whether the absolute value of the entry field is a number. A relevant JavaScript function that signifies that a value is not a number is: `isNaN`
3. If the value in the entry field is not a number, the user is alerted with the message, "Value must be a number."
4. The routine brings focus to the entry field.

A.9.2.2 Creating JavaScript under the Shared Components Provider

To create JavaScript under the Shared Components Provider:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **Shared Components** provider.
4. Click the **Javascript** link next to **Create New...**
5. In the **JavaScript Name** field, enter a descriptive name for the JavaScript.
For example, enter `NotNull` for a JavaScript that ensures there are no null values in an entry field.
6. In the **Language** field, enter the language in which the JavaScript will be written.
For example, enter `JavaScript1.1` or `JavaScript1.2`.
7. Click **Next**.
8. Enter or copy your JavaScript into the field provided.
9. Click **Finish**.

To edit the JavaScript you just created, drill to the relevant JavaScript (in the Portal Navigator: Providers tab: Locally Built Providers link: Shared Components: JavaScripts: your JavaScript), and click the **Edit** link next to the relevant JavaScript.

A.9.2.3 Adding JavaScript to a Form

Once you have created JavaScript under the Shared Components provider, it is automatically added to the selection list that is available in the Build Form wizard. For example, when you create a form, you can select a JavaScript that you created once you reach the Formatting and Validation Options page. The list of available JavaScripts is located on this page under the **Validation Options** section (for more information, see "[Building Forms Declaratively](#)").

A.9.3 Creating Color Definitions

Creating a color definition is an opportunity for you to provide a meaningful name to a color you plan to use in your portal. A color definition is an association between a color name and its hexadecimal value. For example, you might use a standard red as your corporate color. Using your ability to define colors, you could select that red and give it a meaningful name within OracleAS Portal, such as `standard_red`, `company_red`, or even `<your company name>_red`.

You associate a color value in the form #XXXXXX, where X is a value in the range 0-9 or A-F, with any name you choose. The color names you define are used in fonts, page backgrounds, and other elements of OracleAS Portal portlets.

Note: You must have at least the Create shared component access privilege to create a color definition.

You must have at least the Manage shared component access privilege to edit a color definition.

To create a color definition:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **Shared Components** provider.
4. Click the **Color** link next to **Create New...**
5. In the **Color Name** field, enter the name you want to give the color.

You can identify a color by any name you choose; for example, `My_Blue_Color`.

6. In the **Color Value** field, enter the hexadecimal value for the color, for example, `#FF0000` for a shade of red.

Hexadecimal values must be prefaced by the # character. You can click a color in the palette to automatically enter its hexadecimal value in the **Color Value** field.

7. (Optional) To preview a color value, click **Preview**.
8. When you are satisfied with your color definition, click **Create**.

The page updates with a link, which you can click to edit the color definition. If you do not want to edit the color definition at this time, click **Close**.

A.9.4 Creating Image Definitions

Creating an image definition is an opportunity for you to provide a meaningful name and type to an image you plan to use in your portal. An image definition is an association between an image name and the name of the file containing the image. You can specify any name you choose.

Note: You must have at least the Create shared component access privilege to create an image definition.

You must have at least the Manage shared component access privilege to edit an image definition.

To create an image definition:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **Shared Components** provider.
4. Click the **Image** link next to **Create New...**
5. In the **Image Name** field, enter the name you want to give the image.

You can identify an image by any name you choose; for example, `SiteLogo`.

6. In the **Image Filename** field, enter the name and extension of the file containing the image.

For example, enter `logo.gif`. The image must be located in a directory mapped to the OracleAS Portal virtual directory `/images/`.

Note: The `/images/` virtual directory path is set in the Oracle HTTP Listener `plsql.conf` file.

7. From the **Image Type** list, choose an image type, for example `Icon 24x24`.

The type you choose will display next to the image in the **Type** column of the Portal Navigator.

8. Click **Create**.

The page updates with a link, which you can click to edit the image definition. If you do not want to edit the image definition at this time, click **Close**.

A.9.5 Creating Font Definitions

Creating a font definition is an opportunity for you to provide a meaningful name to a font you plan to use in your portal. A font definition is an association between the name of a font face and any descriptive name you choose to give it. For example, your company may have identified a font to be used in all public documents. Using your ability to create a font definition, you could identify that font in OracleAS Portal with a custom name, such as `<your company name>_font`. The fonts you define are used for text that appears in portlets.

Note: You must have at least the Create shared component access privilege to create a font definition.

You must have at least the Manage shared component access privilege to edit a font definition.

To create a font definition:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **Shared Components** provider.
4. Click the **Font** link next to **Create New...**
5. In the **Font Name** field, enter the name you want to give the font.

You can identify a font by any name you choose; for example, `web_banner_font`.

6. In the **Font Value** field, enter the name of a font, for example `Arial`.

You can specify the name of any font that is supported by a Web browser. If you specify a font that is not supported, the Web browser will use its own default font.

You can specify alternative fonts by separating them with commas in the **Font Value** field; for example, `Times New Roman, Times`. In this example, if the user's

Web browser does not support the Times New Roman font, it will use the Times font instead.

7. Click **Create**.

The page updates with a link, which you can click to edit the font definition. If you do not want to edit the font definition at this time, click **Close**.

A.9.6 Using User Interface Templates

Use User Interface (UI) templates to provide a header and footer to an application. UI templates can be applied to Portlet Builder components. By applying a template, you can automatically specify a title, a title background, links to home and help pages, and background colors and images.

UI templates are good for standardizing the overall look and feel of many Portlet Builder components. For example, you can design a UI template for a provider that includes the company logo in the heading, the name of the company in the title, and a common background image. By ensuring every component in the application uses the same UI template, you impose a standard appearance.

Note: In earlier releases you could apply UI templates to pages as well as components within OracleAS Portal. This functionality of UI templates has been replaced by HTML Skins. Refer to *Oracle Application Server Portal User's Guide*.

This section provides information about the two types of user interface template—structured and unstructured—and describes generally how to use them to create a look and feel. It contains the following subsections:

- [Building a Structured User Interface Template](#)
- [Building an Unstructured User Interface Template](#)

A.9.6.1 Building a Structured User Interface Template

You can use structured UI templates only with portlets. You create them with a wizard. In the wizard, you specify images, text, and layout elements that you want to apply to every portlet that uses the template.

You cannot use your own HTML code to extend the template beyond the pre-identified attributes. To achieve greater flexibility, you may want to build an unstructured user interface template (see "[Building an Unstructured User Interface Template](#)").

To build a structured user interface template:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **Shared Components** provider.
4. Click the **User Interface Template** link next to **Create New...**
5. Click the **Structured UI Template** link.
6. In the **Template Name** field, enter a name for the template.

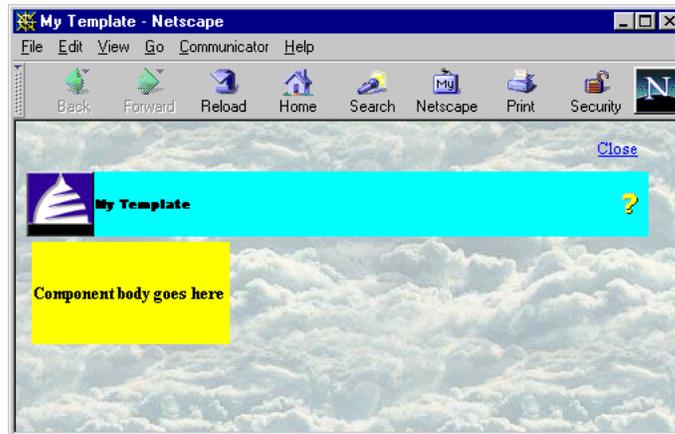
Make the name as descriptive as possible. This is the name users will see when applying a UI template to a portlet during the build process. For example, if the

template will be applied to all portlets created for a scheduling provider, you could name it `Schedule_Template`.

7. Select other options to refine the look and feel of the template.

For example, you can choose an image to appear in the upper left corner of the template and a background image to display behind the portlet, as shown in [Figure A-77](#).

Figure A-77 Structured UI Template with Cloud Image



If you have a question about an option, click the help icon. Leave an option blank if you do not want to include it in your template.

8. (Optional) Click **Preview** to open a new browser window that displays the UI template.

You can reselect options then click **Preview** again to see how the changes affect the look of the template.

9. When you are satisfied with your template, click **Create**.

The page updates with a link, which you can click to edit the template. If you do not want to edit the template at this time, click **Close**.

A.9.6.2 Building an Unstructured User Interface Template

Unstructured user interface templates are based on HTML code that you supply. Because you are writing your own HTML code, you can create a more elaborate and sophisticated unstructured UI template than you can a structured UI template.

To create an unstructured user interface template, you first write HTML code to create a Web page. You can also copy this code into OracleAS Portal from another source, such as a Web page editor. Once entered into OracleAS Portal, you edit the HTML code to add substitution tags. When the HTML code executes, the substitution tags embed portlets, titles, and other elements into the Web page. For example, you can add a `#BODY#` tag that adds a portlet such as a chart or report to the original Web page background. For a list of all the substitution tags you can include in your HTML code, see [Table A-40](#).

In an unstructured template, you can use `<ORACLE></ORACLE>` tags to include SQL statements or PL/SQL blocks. You can also include HEAD elements such as custom JavaScript, cascading style sheet references, and META tags. You can use special substitution tags for integrating page metadata to embed PL/SQL scripting.

To build an unstructured user interface template:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **Shared Components** provider.
4. Click the **User Interface Template** link next to **Create New...**
5. Click the **Unstructured UI Template** link.
6. In the **Template Name** field, enter a name for the template.

Because this is the name users will see when applying a UI template to a page or portlet during the build process, you should make the name as descriptive as possible. For example, if the template will be applied to all portlets created for a calendar, you could name it `Calendar_Template`.

7. In the **Template Definition** field, enter or paste the HTML code you want to use as the basis for your unstructured user interface template.

The HTML code you supply should create a Web page.

8. Embed substitution tags in the HTML code in the location where you want the items associated with the tags to appear in the finished template.

[Table A-40](#) lists and describes the tags you can use. For example, you may want to embed a `#BODY#` substitution tag in the code. `#BODY#` adds the main body of the page, such as page content or a portlet, to the Web page when the HTML code executes. If the HTML source code divides a page into two frames, you can embed the `#BODY#` tag in different places in the code, causing the portlet to display in the left frame or the right frame.

Table A-40 Unstructured UI Template Substitution Tags

Tag	Value set by
<code>#BODY#</code>	The portlet itself or the page's portlets.
<code>#IMAGE_PREFIX#</code>	The OracleAS Portal images directory as specified in the <code>plssql.conf</code> configuration file.
<code>#USER#</code>	The user name of the user who is currently logged on.
<code>#USER.FULLNAME#</code>	The full name of the user who is currently logged on. The full name includes the user's first, middle, and last names.
<code>#VERSION#</code>	The version of this installation of OracleAS Portal.
<code>#HELPSCRIPT#</code>	The JavaScript function used to open a window to display the online help. If you include <code>#HELPLINK#</code> in your template, you should also include this tag.
<code>#HELPLINK#</code>	Used to display the help text for the component and its personalization form that you specified in the component creation wizard.
<code>#DIRECTION#</code>	The direction of character layout (left-to-right or right-to-left). This value is set based on the language.
<code>#ALIGN_LEFT#</code>	Align text to the left.
<code>#ALIGN_RIGHT#</code>	Align text to the right
<code>#PAGE.STYLE#</code>	The HTML LINK element that references the page's cascading style sheet. This tag is allowed only in the document HEAD.

Table A-40 (Cont.) Unstructured UI Template Substitution Tags

Tag	Value set by
#PAGE.STYLE.URL#	The URL of the page's cascading style sheet.
#PAGE.BASE#	The HTML base element for the base URL of the document. This tag is allowed only in the document HEAD.
#PAGE.BASE.URL#	The base URL.
#PAGE.BGIMAGE#	The HTML source for the whole page background image.
#PAGE.BGCOLOR#	The HTML source for the whole page background color.
#PAGE.SUBPAGELINK#	The URL for a sub-page link.
#PORTAL.HOME#	The HTML image hyperlink to the portal home page.
#PORTAL.HOME.URL#	The URL of the portal home page.
#PORTAL.HOME.IMAGE#	The image used for the portal home page link.
#PORTAL.HOME.LABEL#	The text used for the portal home page link.
#PORTAL.NAVIGATOR#	The HTML image hyperlink to the Navigator.
#PORTAL.NAVIGATOR.URL#	The URL of the Navigator.
#PORTAL.NAVIGATOR.IMAGE#	The image used for the Navigator link.
#PORTAL.NAVIGATOR.LABEL#	The text used for the Navigator link.
#PORTAL.HELP#	The HTML image hyperlink to the online help.
#PORTAL.HELP.URL#	The URL of the online help.
#PORTAL.HELP.IMAGE#	The image used for the online help link.
#PORTAL.HELP.LABEL#	The text used for the online help link.
#PORTAL.LOGOUT#	The HTML text hyperlink to the logout URL.
#PORTAL.LOGOUT.URL#	The logout URL.
#PORTAL.LOGOUT.LABEL#	The text used for the logout link.
#PORTAL.ACCOUNTINFO#	The HTML text hyperlink to the account information dialog.
#PORTAL.ACCOUNTINFO.URL#	The URL of the account information page.
#PORTAL.ACCOUNTINFO.LABEL#	The text used for the account information link.
#	
#PORTAL.COMMUNITY#	The name of the OracleAS Portal Community Web site.
#PORTAL.COMMUNITY.URL#	The URL of the OracleAS Portal Community Web site.
#PORTAL.COMMUNITY.IMAGE#	The image of the OracleAS Portal Community Web site.
#PORTAL.COMMUNITY.LABEL#	The label of the OracleAS Portal Community Web site.
#PAGE.CUSTOMIZEPAGE#	The HTML text hyperlink to the personalize page.
#PAGE.CUSTOMIZEPAGE.URL#	The URL of the personalize page.
#PAGE.CUSTOMIZEPAGE.LABEL#	The text used for the personalize page link.
#PAGE.EDITPAGE#	The HTML text to allow page editing.

Table A-40 (Cont.) Unstructured UI Template Substitution Tags

Tag	Value set by
#PAGE.EDITPAGE.URL#	The HTML text to allow page URL editing.
#PAGE.EDITPAGE.LABEL#	The HTML text to allow page label editing.
#PAGE.REFRESH#	The HTML text hyperlink used to refresh the page.
#PAGE.REFRESH.URL#	The refresh URL.
#PAGE.REFRESH.LABEL#	The text used for the refresh link.

- (Optional) Click **Preview** to open a new browser window that displays the UI template.

You can update the code then click **Preview** again to see how the changes affect the look of the template.

- When you are satisfied with your template, click **Create**.

The page updates with a link, which you can click to edit the template. If you do not want to edit the template at this time, click **Close**.

A.10 Example: Building Charts and Reports

This example assumes that you have access to an OracleAS Portal database provider in the SCOTT schema called myCompany_DB_Provider. If you have the appropriate privileges, you can create this provider yourself (for information about how to do this, see "[Creating a Provider for Locally Built Portlets](#)"). If you do not have the appropriate privileges to create OracleAS Portal database providers, ask your portal administrator to create the provider for you.

This example includes the following exercises:

- [Exercise: Building the Team Details Report](#)
- [Exercise: Building the Average Salaries Chart](#)
- [Exercise: Building the Team Bonuses Report](#)

A.10.1 Exercise: Building the Team Details Report

The Team Details report, shown in [Figure A-78](#), displays a list of employees in the Sales department (department 30).

Figure A-78 Team Details Report

Name	Employee No	Job
ALLEN	7499	SALESMAN
WARD	7521	SALESMAN
MARTIN	7654	SALESMAN
BLAKE	7698	MANAGER
TURNER	7844	SALESMAN
JAMES	7900	CLERK

To build the Team Details report:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the provider **myCompany_DB_Provider**.
If you do not see this provider, you can create it. For more information, see ["Creating a Provider for Locally Built Portlets"](#).
4. Click the **Report** link next to **Create New...**
5. Click the **Reports From Query Wizard** link.
6. In the **Name** field, enter `<YourName>_team_details`.
7. In the **Display Name** field, enter `Team Details`.
8. In the **Description** field, enter `team details exercise`.
9. In the **Portal DB Provider** list, **MYCOMPANY_DB_PROVIDER** should already be selected.
10. Click **Next**.
11. In the **Tables and Views** field, enter `SCOTT.EMP` if necessary.
12. Click **Add**.
13. Click **Next**.
14. From the **Columns** list, select:
 - EMP.ENAME
 - EMP.EMPNO
 - EMP.JOB

Click the right arrow button after each selection to move it from **Columns** to **Selected Columns**.
15. If necessary, use the up and down arrows to the right of **Selected Columns** to arrange the columns in the order specified above.
16. Click **Next**.
17. From the **Column Name** list, choose **EMP.DEPTNO**.
18. From the **Condition** list, choose `=`.
19. In the **Value** field, enter `30`.
20. Click **Next**.
21. Select **Tabular**.
22. Click **Next**.
23. Next to each column, enter the **Column Heading Text** as indicated in [Table A-41](#):

Table A-41 Team Details Report Column Heading Text

Column	Column Heading Text
ENAME	Name
EMPNO	Employee No
JOB	Job

This will add descriptive labels above columns that appear in your report.

24. Click **Next** twice, or until you see the **Display Options** step of the wizard.
25. In both the Full Page Options and Portlet Options sections, select the values shown in [Table A-42](#):

Table A-42 Team Details Report Full Page and Portlet Display Options

Option	Value
Heading Font Face	Arial
Heading Font Color	White
Heading Size	10pt
Row Text Font Face	Arial
Row Text Font Color	Black
Row Text Size	10pt
Heading Background Color	Slate Gray
Border	Thin Border

26. Click **Finish**.
27. Click **Run as Portlet** to see what your report looks like.
28. Close the browser window where the report is displayed, and click **Close** to close the component manager and return to the Portal Navigator.

A.10.2 Exercise: Building the Average Salaries Chart

The Average Salaries chart, shown in [Figure A-79](#), displays the average salary for each job title.

Figure A-79 Average Salaries Chart



To build the Average Salaries chart:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the provider **myCompany_DB_Provider**.
4. Click the **Chart** link next to **Create New...**
5. Click the **Charts From SQL Query** link.
6. In the **Name** field, enter `<YourName>_team_average_salary`.
7. In the **Display Name** field, enter `Average Salaries`.
8. In the **Description** field, enter `average salaries exercise`.
9. In the **Portal DB Provider** list, **MYCOMPANY_DB_PROVIDER** should already be selected.

10. Click **Next**.

11. In the SQL Query field, enter the following code:

```
select
  null      the_link,
  job       the_name,
  avg(sal) the_data
from emp
group by job
```

This SQL query will work only if you have SELECT privileges on the EMP table in the SCOTT schema.

12. Click **Next** twice, or until you see the **Display Options** step of the wizard.

13. In both the Full Page Options and Portlet Options sections, select the values shown in [Table A-43](#):

Table A-43 Average Salaries Chart Full Page and Portlet Display Options

Option	Value
Type Face	Arial
Font Color	Black
Font Size	10 pt
Chart Type	Horizontal
Bar Image	Red Bar (red.gif)

14. Click **Finish**.

15. Click **Run as Portlet** to see what your chart looks like.

16. Close the browser window where the chart is displayed, and click **Close** to close the component manager and return to the Portal Navigator.

A.10.3 Exercise: Building the Team Bonuses Report

The Team Bonuses report, shown in [Figure A-80](#), displays the average bonus paid to employees in each department.

Figure A-80 Team Bonuses Report

Department No	Department	Bonus Paid
10	ACCOUNTING,NEW YORK	(null)
20	RESEARCH,DALLAS	(null)
30	SALES,CHICAGO	2210

To build the Team Bonuses report:

1. In the Navigator, click the **Providers** tab to bring it forward.
2. At the root level of the Providers tab, click the **Locally Built Providers** link.
3. Click the link for the **myCompany_DB_Provider** provider.
4. Click the **Report** link next to **Create New...**
5. Click the **Reports From SQL Query** link.

6. In the **Name** field, enter <YourName>_team_bonuses.
7. In the **Display Name** field, enter Team Bonuses.
8. In the **Description** field, enter team bonuses example.
9. In the **Portal DB Provider** list, **MYCOMPANY_DB_PROVIDER** should already be selected.
10. Click **Next**.
11. In the **SQL Query** field, enter the following code:

```
select dept.deptno, dept.dname||','||dept.loc, sum(emp.comm)
from dept, emp
where dept.deptno = emp.deptno
group by dept.deptno, dept.dname||','||dept.loc
```

The above query summarizes data from selected columns contained in the DEPT and EMP tables. Although we used a SQL query to build the report, we just as easily could have built it using the Reports Query Wizard.

This SQL query will work only if you have SELECT privileges on the DEPT and EMP tables in the SCOTT schema.

12. Click **Next**.
13. Select **Tabular**.
14. Click **Next**.
15. Next to each column, enter the **Column Heading Text** as indicated in [Table A-44](#):

Table A-44 Team Bonuses Report Column Heading Text

Column	Column Heading Text
DEPTNO	Department No
DEPT.DNAME ',' DEPT.LOC	Department
SUM(EMP.COMM)	Bonus Paid

This will add descriptive labels above the columns that appear in your report.

16. Click **Next** twice, or until you see the **Display Options** step of the wizard.
17. For both the Full Page Options and Portlet Options sections, select the values shown in [Table A-45](#):

Table A-45 Team Bonuses Report Full Page and Portlet Display Options

Option	Value
Heading Font Face	Arial
Heading Font Color	White
Heading Size	10pt
Row Text Font Face	Arial
Row Text Font Color	Black
Row Text Size	10pt
Heading Background Color	Slate Gray
Border	Thin Border

-
18. Click **Finish**.
 19. Click **Run as Portlet** to see what your report looks like.
 20. Close the browser window where the report is displayed, and click **Close** to close the component manager and return to the Portal Navigator.

Troubleshooting Portlets and Providers

This appendix describes common problems that you might encounter when using OracleAS Portal and explains how to solve them. It contains the following topics:

- [Diagnosing General Portlet Problems](#)
- [Diagnosing Java Portlet Problems](#)
- [Diagnosing OmniPortlet Problems](#)
- [Diagnosing Web Clipping Problems](#)
- [Need More Help?](#)

Note: Throughout this chapter, you will see references to ORACLE_HOME. ORACLE_HOME represents the full path of the Oracle home, and is used in cases where it is easy to determine which Oracle home is referenced. The following conventions are used in procedures where it is necessary to distinguish between the middle tier, OracleAS Infrastructure, or Oracle Application Server Metadata Repository Oracle home:

- MID_TIER_ORACLE_HOME, represents the full path of the middle-tier Oracle home.
 - INFRA_ORACLE_HOME, represents the full path of the Oracle Application Server Infrastructure Oracle home.
 - METADATA_REP_ORACLE_HOME, represents the full path of the OracleAS Infrastructure home containing the Oracle Application Server Metadata Repository.
-
-

B.1 Diagnosing General Portlet Problems

This section describes common problems and solutions for all portlets. It contains the following topic:

- [Portlet Refresh Failure](#)
- [HTML Tags Appearing in Portlet](#)

B.1.1 Portlet Refresh Failure

When using the JavaScript `document.write()` method in conjunction with a Mozilla browser, you may find that portlet refresh does not work.

Problem

When using a Mozilla browser, such as Firefox, the `document.write()` method causes portlet refresh to no longer work as expected.

Solution

Avoid using `document.write()` in your output if you also want portlet refresh to work on Firefox. If this is not possible, you can choose to have the portlet not display the Refresh and Restore icons during rendering. You can also turn off portlet refresh and restore at the region level.

B.1.2 HTML Tags Appearing in Portlet

After upgrading from an earlier release to Release 10.1.4, you may find unformatted HTML appearing in your portlets, for example, in the portlet title.

Problem

When viewing a portlet, you see raw HTML. For example, you might see the following in a portlet title:

```
<b>Oracle Application Server 10<i>g</i> Collateral</b>
```

when what you expected to see was:

Oracle Application Server 10g Collateral

To protect against cross site scripting (XSS) attacks, OracleAS Portal Release 10.1.4 escapes all user input by default. Thus, some HTML that was formatted in earlier releases now appears unformatted because it has been escaped to plain text.

Solution

You can resolve this issue in one of two ways:

- Tell your users to stop entering HTML tags as part of their input and have them enter only plain text.
- Turn on compatibility mode to make your OracleAS Portal instance behave the way it did in releases prior to Release 10.1.4, that is, stop the default escaping of HTML to plain text. Note that turning on compatibility mode makes your portal instance less secure.

For more information on these options, refer to *Oracle Application Server Portal Installation and Upgrade Guide*.

B.2 Diagnosing Java Portlet Problems

This section describes common problems and solutions for Java portlets. It contains the following topics:

- [Portlet Logging](#)
- [Installation and Deployment Problems](#)
- [Java Portlet Wizard Not Available](#)
- [Portlet Code Does Not Compile](#)
- [Application Server Connection Test Fails](#)
- [Provider Test Page Shows Error](#)

-
- [Portlet Does Not Display on Page](#)
 - [After Initial Successful Display, Portlet Does Not Display on Page](#)
 - [Provider Group Not Created](#)
 - [URL-Based Portlet Does Not Work](#)

B.2.1 Portlet Logging

In addition to specific issues listed in the other sections of this appendix, the following general techniques can help you to troubleshoot portlet problems.

Problem 1

When accessing a portal page, the portlet does not display or displays an error message.

Solution 1

Check the application log file look for errors.

For OracleAS Portal:

```
MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/application-deployments/portal/OC4J_Portal_default_island_1/application.log
```

For a custom Web provider:

```
MID_TIER_ORACLE_HOME/j2ee/OC4J_instance_name/application-deployments/web_application_name/OC4J_Portal_default_island_1/application.log
```

Problem 2

Pertinent information that may help solve the problem is not being recorded in the log file.

Solution 2

Increase the provider's log level to produce more detailed logging information by adding the following entry to the `web.xml` file:

```
<env-entry>  
<env-entry-name>oracle/portal/provider/global/log/logLevel</env-entry-name>  
  <env-entry-value>6</env-entry-value>  
  <env-entry-type>java.lang.Integer</env-entry-type>  
</env-entry>
```

You may also change this value for runtime by editing `orion-web.xml` or updating it in the Grid Control Console. You may have to restart OC4J to ensure that the changes made to the configuration file take effect.

B.2.2 Installation and Deployment Problems

This section describes problems that you may encounter when installing and deploying the PDK-Java framework and samples.

B.2.2.1 Cannot Find a Java Class Object

You receive an error message about a Java class that does not exist. For example:

```
An unexpected error occurred-29540 : class  
  oracle/webdb/provider/web/HttpProviderDispatcher does not exist (WWC-43000)
```

Problem

The referenced Java class object is not in the database or it is invalid. OracleAS Portal, not PDK-Java, generates the error message when it cannot execute the class.

Solution

Log into the database as your main OracleAS Portal schema. Execute a SELECT statement to verify that the object is in the schema. For example:

```
SELECT object_name, object_type, status FROM user_objects
WHERE object_name like '%HttpProvider%'
```

Note that the name between quotes is case sensitive.

You should receive the following back:

```
/3334f18_HttpProviderDispatcher
```

Check for invalid or missing JAVA CLASS objects. Something could be wrong with the OracleAS Portal installation. If so, then recompiling invalid objects might help resolve it.

B.2.2.2 Cannot Deploy the template.ear File

You receive the following error message when deploying your EAR file based on `template.ear`:

```
Invalid J2EE application file specified - Base Exception:
Cannot get xml document by parsing WEB-INF/web.xml in template.war: <Line 88,
Column 14> : '--' is not allowed in comments.
Resolution:
```

Problem

The `web.xml` file contains a syntax error.

Solution

Verify that the syntax of `web.xml` is correct. Some versions of `web.xml` shipped in `template.war` have a misplaced comment tag. Make sure that all opening comment tags, `<!--`, have a matching closing tag, `-->`, before starting a new comment tag.

B.2.2.3 Error When Attempting to Register Provider

A number of errors may occur when you attempt to register your provider. This section explains what can go wrong and how you can correct it. If your scenario is not covered below, then check the `application.log` of your provider or, if that does not help, use `logcfg.sql` for Portal Repository logging. For more information `logcfg.sql` and `application.log`, refer to the *Oracle Application Server Portal Configuration Guide*.

Problem 1

You receive the following error message:

```
Internal error (WWC-00006)
The provider URL specified may be wrong or the provider is not running.
(WWC-43176)
```

When OracleAS Portal attempts to register your provider, it must contact the listener that serves your Web portlets. If you have already accessed the provider's test page,

`http://host.domain:port/context/providers/servicename`, according to the installation instructions, OracleAS Portal may not recognize your machine.

Solution 1

Make sure the machine where OracleAS Portal resides can access your Web provider listener. The easiest way to test this setup is to start a browser on the host of the OracleAS Portal repository database and try to access the provider's test page. If the browser needs a proxy setting to reach the provider, then you should set the same proxy for OracleAS Portal on the Administer tab. You should also use this proxy when registering the provider.

If your Web provider server is not part of the DNS, then add an entry in the OracleAS Portal server's host file.

If a firewall exists between the machine with the OracleAS Portal database and the machine with the provider, then make sure that the necessary port is open.

Problem 2

You receive the following error:

```
Internal error (WWC-00006)
The provider URL specified may be wrong or the provider is not running.
(WWC-43176)
The following error occurred during the call to Web provider: Can't read
deployment properties for service: _default (WWC-43147)
```

When you register a provider, you have the option of specifying a Service Id. If you do not specify anything in the Service Id field, the registration URL will not contain the service name part, `http://host.domain:port/context/providers/`. Therefore, OracleAS Portal is looking for a default service, which is stored in a deployment file called `_default.properties`. When this file is not found, you receive this error.

Solution 2

Make sure that you bundle a file called `_default.properties` into your WAR file with the following path:

```
/Web-inf/deployment/
```

The `_default.properties` file should define the default service to use when none is specified for the provider. The file should look similar to the following:

```
serviceClass=oracle.webdb.provider.v2.adapter.soapV1.ProviderAdapter
loaderClass=oracle.portal.provider.v2.http.DefaultProviderLoader
showTestPage=true
definition=providers/test/provider.xml
autoReload=true
testPageURI=/htdocs/testpage/TestPage.jsp
```

Problem 3

You receive the following error message:

```
Internal error (WWC-00006)
The provider URL specified may be wrong or the provider is not running.
(WWC-43176)
The following error occurred during the call to Web provider: Can't read
deployment properties for service: test (WWC-43147)
```

OracleAS Portal cannot find the deployment properties file for the service you specified in the Service Id field or the service name part of the registration URL, `http://host.domain:port/context/providers/servicename`. For example, suppose you received this error in response to your attempt to register your provider with the following URL:

```
http://host.domain:port/context/providers/test
```

In this case, you probably do not have a file called `test.properties` in your WAR file in `/Web-inf/deployment/`.

Solution 3

Make sure that you bundle a deployment properties file (for example, `test.properties`) into your WAR file with the following path:

```
/Web-inf/deployment/
```

The file should look similar to the following:

```
serviceClass=oracle.webdb.provider.v2.adapter.soapV1.ProviderAdapter
loaderClass=oracle.portal.provider.v2.http.DefaultProviderLoader
showTestPage=true
definition=providers/test/provider.xml
autoReload=true
testPageURI=/htdocs/testpage/TestPage.jsp
```

Problem 4

You receive the following error message:

```
An error occurred when attempting to call the providers register function.
(WWC-43134)
The provider URL specified may be wrong or the provider is not running.
(WWC-43176)
The following error occurred during the call to Web provider: Class
oracle.portal.provider.v2.render.RenderManager has no set or add method for tag
"createdOn" (WWC-43147)
```

Solution 4

If you are using `DefaultProvider`, `provider.xml` includes the element `<createdOn>`. When the XML is parsed, the initialization process looks for a method called `setCreatedOn` in the class representing the containing element. For example:

```
<renderer class="my.local.Renderer">
<createdOn>12-Mar-2001</createdOn>
...
</renderer>
```

In this example, the initialization process looks for `my.local.Renderer.setCreatedOn()`. In your case, the appropriate method does not exist, causing this error.

Problem 5

You receive an error like the following:

```
(WWC-00006)
An unexpected error occurred: User-Defined Exception
(WWC-43000)
wwpro_api_provider_registry.register_provider
An unexpected error occurred: ava.sql.SQLException: Inserted value too large for
```

column:

This error indicates that your portlet has exceeded the data limit for a portlet. Each portlet is limited to 4K of data. The lengths of all of the following contribute toward this data limit:

- provider name, display name, and description
- parameter name, display name, and description
- event name, display name, and description

Solution 5

You can take two actions to reduce the amount of data used for the portlet:

- Reduce the length of the portlet's parameter and event names, display names, and descriptions.
- Reduce the number of parameters and events in your portlet

Problem 6

You receive an error similar to the following when trying to register your WSRP provider:

```
An error occurred when attempting to call the providers register function.  
(WWC-43134)
```

```
An error occurred during the call to the WSRP Provider: Java stack trace from root  
exception:
```

```
java.rmi.ServerException: Internal Server Error (caught exception while handling  
request: oracle.webdb.wsrp.server.ContainerRuntimeException: An internal error has  
occurred in method <init>)  
at com.sun.xml.rpc.client.StreamingSender._raiseFault(StreamingSender.java:384)  
at com.sun.xml.rpc.client.StreamingSender._send(StreamingSender.java:245)  
at oracle.webdb.wsrp.WSRP_v1_Registration_PortType_Stub.register(WSRP_  
v1Registration_PortType_Stub.java:183)  
at oracle.webdb.wsrp.client.design.v1.OraWSRP_v1_Registration_  
PortType.register(Unknown Source). (WWC-43273)
```

When you configure OC4J standalone for WSRP, you must edit `data-sources.xml`. Typically, this message indicates a problem in your `data-sources.xml`.

Solution 6

Review the entry you added to `data-sources.xml` as per the procedure in [Section 6.3.2, "Configuring OC4J Standalone"](#). Ensure that the syntax is correct and that line breaks are occurring in the proper places. Also confirm that you can connect to the database with the specified username, password, port, host, and service name.

B.2.2.4 Error Adding a Portlet to a Provider

You added a portlet to your provider, but, when you view the provider in OracleAS Portal, you do not see the new portlet.

Problem

The most common problem is a syntactical error in `provider.xml`, but it could also be that the updated `provider.xml` file is not being found for some reason.

Solution

Try the following:

- Examine `provider.xml`. Ensure that you have two syntactically correct opening and closing portlet tags within the provider tag. For example:

```
<provider class="oracle.portal.provider.v2.DefaultProviderDefinition"
  session="true">
  <portlet class="oracle.portal.provider.v2.DefaultPortletDefinition"
    version="1">
    <id>1</id>
    ...
  </portlet>
  <portlet class="oracle.portal.provider.v2.DefaultPortletDefinition"
    version="1">
    <id>2</id>
    ...
  </portlet>
</provider>
```

- Stop and restart the listener to accept the changes to `provider.xml`. Check the test page for errors. If no errors are found, then restart the OC4J instance and refresh the provider.
- Check the `application.log` of the provider for errors.

B.2.2.5 Portlet Does Not Exist

You received the following error message:

```
Error: The listener returned the following Message: 500 Portlet with id $1 doesn't exist
```

Problem

You removed a portlet from `provider.xml` without first removing the portlet from the page. The portlet no longer appears on the Customization page and therefore you cannot remove it from the page.

Solution

Delete the region that contains the portlet. Remember, when deleting a portlet from `provider.xml`, delete the portlet from the page first.

B.2.2.6 File Not Found

You receive the following error message:

```
Request URI:/jpdk/snoop/snoopcustom.jsp Exception: javax.servlet.ServletException:
java.io.FileNotFoundException:
C:\ias\Apache\Apache\htdocs\jpdk\snoop\snoopcustom.jsp (The system cannot find the
path specified)
```

Problem

You added a JSP portlet to your page. OracleAS Portal cannot locate the JSP in the file system via `provider.xml`.

Solution

Confirm the file name and location and verify the information within `provider.xml`.

B.2.2.7 XML Parser Error

The XML Parser may fail at times when parsing your `provider.xml`. This section explains what can go wrong and how you can correct it.

Problem 1

You receive the following error message:

```
Error: The XML parser encountered an Error, and could not complete the conversion for portlet id=150, it returned the following message: XML Parsing Error
```

You attempted to register your provider or display portlets on a page, and received the above error message. When altering `provider.xml`, one or more of the tags were corrupt and the file cannot be parsed.

Solution 1

Review `provider.xml` for errors.

Problem 2

You receive the following error message:

```
Error: The XML parser encountered an Error, and could not complete the conversion for portlet id=146, it returned the following message: XSL reference value missing in XML document.
```

You attempt to add your portlet to a page or register your provider, and you receive the above error. The portlet information within `provider.xml` may be incorrect. Another possibility is that your classes cannot be located.

Solution 2

Check that no tags are missing and that they appear in the correct sequence. Verify that your class files exist and are specified correctly within `provider.xml`.

B.2.2.8 Error Adding Portlets

You receive the following error message when trying to add portlets to a page:

```
Error: An unexpected error occurred: ORA-29532: Java call terminated by uncaught Java exception: Attribute value should start with quote. (WWC-43000) An unexpected error occurred: Attribute value should start with quote. at oracle.xml.parser.v2.XMLERror.flushErrors(XMLERror.java:205)
```

Problem

OracleAS Portal has an issue with `provider.xml`. Most likely, an attribute within the file is corrupt.

Solution

Review `provider.xml` for errors.

B.2.2.9 Content Request Timed Out

You receive the following error message:

```
ERROR TIMEOUT FOR CONTENT=timeout
```

Problem

You successfully registered your Web provider. When adding portlets to a page or refreshing a page with existing portlets, you receive the above error message. This error indicates that OracleAS Portal timed out trying to contact your Java portlet listener.

Solution

Verify that you can still access the sample page:

```
http://host:port/context/providers/servicename
```

You set the timeout period by adding the following `init` parameters to the page servlet of OracleAS Portal's `web.xml` at `MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/applications/portal/portal/WEB-INF/web.xml`. Note that this `web.xml` file is for the Parallel Page Engine. For example:

```
<init-param>
  <param-name>requesttime</param-name>
  <param-value>1000</param-value>
</init-param>
<init-param>
  <param-name>minTimeout</param-name>
  <param-value>100</param-value>
</init-param>
<init-param>
  <param-name>stall</param-name>
  <param-value>500</param-value>
</init-param>
```

For more information about `web.xml` and its configuration parameters, refer to *Oracle Application Server Portal Configuration Guide*.

You may also set a timeout value for individual providers when you register them with OracleAS Portal. Note that the provider timeout value must match or exceed the `minTimeout` parameter value in `web.xml` in order to have any effect. For information about registering PDK-Java providers, refer to [Section 6.6.2.5, "Registering and Viewing Your Portlet"](#). For information about registering WSRP providers, refer to [Section 6.4.2.4.1, "Adding Your Portlet"](#).

B.2.2.10 Message 500 Returned

You receive the following error message:

```
Error: The listener returned the following Message: 500
```

Problem

This generic message displays when OracleAS Portal receives an Internal Server Error while attempting to display your portlet. This problem might have any one of several causes.

Solution

Review the `application.log` file to discover the cause of the error.

For OracleAS Portal:

```
MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/application-deployments/portal/OC4J_Portal_
default_island_1/application.log
```

For a custom Web provider:

```
MID_TIER_ORACLE_HOME/j2ee/OC4J_instance_name/application-deployments/web_
application_name/OC4J_Portal_default_island_1/application.log
```

B.2.2.11 JPS Portlets with the get Method not Working

HTML forms can be submitted using either the `get` or `post` method, but the WSRP standard only requires the consumer (portal) to use the `post` method. Support of the

`get` method is optional according to the standard. Since portal consumers are not required to support the `get` method, we highly recommended that you use the `post` method when developing your portlets.

Problem

You have JPS portlets that use the `get` method and they are not working correctly in OracleAS Portal. Forms with `get` lose the query string in the action URL when the form is submitted. The query string is needed for the portlets to return back to the portal and for the WSRP state.

Solution

Replace the `get` method with the `post` method.

B.2.2.12 Portlet Displays Session Expired Message After Redeployment

When you redeploy your portlets to the portlet container, all existing sessions between the producer and all of its consumers are lost. If a consumer tries to reuse an existing producer session, it may receive an error message the first time it tries to contact the producer after redeployment.

Problem

You receive an error message in your portlet the first time you access it after redeployment.

Error: Could not get markup. The cookie or session is invalid or there is a runtime exception.

Solution

To re-establish the producer's session, refresh the portal page. You won't see this error message if you are re-accessing the portlet from a new browser session because it automatically establishes a new producer session.

B.2.3 Java Portlet Wizard Not Available

In Oracle JDeveloper, when you try to open the Java Portlet Wizard by choosing **File > New > Web tier**, the **Portlets** menu selection is not present.

Problem

The Java Portlet Wizard is not installed.

Solution

Install the Portal Extension to Oracle JDeveloper, as described in [Section 6.4.1, "Installing the Portal Extension for Oracle JDeveloper"](#).

B.2.4 Portlet Code Does Not Compile

When you try to compile the code for your portlet, you receive a compilation error.

Problem

The Portlet Development library is not selected.

Solution

Make sure that Portlet Development library is selected for the project. Edit your project's properties and select the **Profiles > Development > Libraries** entry in the

pane on the right. Make sure that the Portlet Development library is listed under **Selected Libraries**.

B.2.5 Application Server Connection Test Fails

In Oracle JDeveloper, the Application Server Connection Test fails with the message `Connection refused: connect`.

Problem 1

OC4J is not running.

Solution 1

Make sure OC4J is up and running by typing the following URL in your browser:

`http://yourhostyourdomain:8888`

Problem 2

The connection information is incorrect.

Solution 2

Verify the connection information that you provided in the Connection Setup wizard.

B.2.6 Provider Test Page Shows Error

When accessing the provider test page with your browser, an error is shown.

Problem 1

The `provider.xml` syntax is incorrect.

Solution 1

Correct the `provider.xml` syntax. Refer to the *PDK-Java XML Provider Definition Tag Reference* document on Portal Studio:

http://portalstudio.oracle.com/pls/ops/docs/folder/community/pdk/jpdk/v2/xml_tag_reference_v2.html

Problem 2

Needed JAR files are missing from the deployment environment.

Solution 2

Search the JAR files for the missing class. When the missing JAR file is identified, you can add to the `lib` directory of the application from the Oracle JDeveloper Deployment Profile. Refer to the *Oracle JDeveloper Online Help System* for more information about the deployment profile.



B.2.7 Web Provider Not Appearing in Portlet Repository

Users cannot see a Web provider, such as Omniportlet, in the Portlet Repository even though it has been registered successfully and is visible in the navigator.

Problem

The Web provider uses `DBPreferenceStore` and the database information stored in `data-sources.xml` is incorrect.

Solution

Correct the information in `data-sources.xml`. Refresh the provider and invalidate the Portlet Repository cache.

B.2.8 Portlet Does Not Display on Page

When you access a portal page, the portlet does not display on the page.

Problem 1

The provider is not running.

Solution 1

Make sure that the provider is up and running by entering the provider registration URL in your browser's address bar.

Problem 2

The security manager for the provider is preventing the portlet from displaying.

Solution 2

In the provider definition file, `provider.xml`, delete or comment out the security manager, if any.

Problem 3

The user may not have the Execute privilege for the portlet as defined on the portlet's Access page.

Solution 3

Check the privileges for the portlet and, if the user or a group the user belongs to does not have the Execute privilege, grant them access. Portlets sometimes inherit their access privileges from the provider. You can use the Navigator in OracleAS Portal to find the portlet's provider and check its access privileges, then drill down to the portlet to see its access privileges.

Problem 4

You get an error trying to display the portlet after you redeployed it.

Solution 4

Refer to [Section B.2.2.12, "Portlet Displays Session Expired Message After Redeployment"](#).

B.2.9 After Initial Successful Display, Portlet Does Not Display on Page

When you access a portal page, the portlet initially displays on the page but returns error messages in subsequent display attempts.

Problem

The provider session information is incorrect.

Solution

Check whether or not the provider uses sessions. If it does, edit the provider registration information to make sure that you registered it accordingly:

Login Frequency: Once per User Sessions

You should also confirm that `<session>` is set to `true` in `provider.xml`.

B.2.10 Provider Group Not Created

When you create a new provider group, the provider group is not created.

Insufficient Privilege. Please contact the administrator for privilege in Default Provider Builder Instance.

You might also receive some `mod_osso` errors.

Problem 1

If you get `mod_osso` errors during authentication, the most likely problem is that `mod_osso` is not correctly configured on the middle tier or you have a `mod_osso` registration problem.

Solution 1

For information on reregistering `mod_osso`, refer to the *Oracle Application Server Single Sign-On Administrator's Guide*.

Problem 2

You have a problem in the `jpdk` application classpath.

Solution 2

Check the `jpdk` application log for errors.

Problem 3

The user does not have the necessary privileges to access these pages.

Solution 3

Modify `provideruiaccls.xml` to grant the user the necessary privileges. `provideruiaccls.xml` has two instances, one for PDK-Java providers and one for OracleAS Portal tools (such as Omniportlet) providers:

```
MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/applications/jpdk/jpdk/WEB-INF/  
deployment_providerui
```

```
HOME/j2ee/OC4J_Portal/applications/portalTools/providerBuilder/WEB-INF/  
deployment_providerui
```

The following code sample illustrates how you can add users in `provideruiaccls.xml`:

```
<object name="ANY_PROVIDER" owner="providerui">  
  <user name="orcladmin" privilege="500"/>  
  <user name="portal" privilege="500"/>
```

B.2.11 URL-Based Portlet Does Not Work

Attempting to display your portlet via URL generates the following error message:

```
500 INTERNAL SERVER ERROR
```

Problem

The `httpProxyHost` is not defined correctly.

Solution

In general, you should replace your URL-based portlets (formerly URL Services) with Web Clipping. Refer to [Chapter 5, "Creating Content-Based Portlets with Web Clipping"](#) for more information about Web Clipping.

If for some reason you must continue to use a URL-based portlet, check the default proxy information in your `provider.xml` file. For example:

```
<proxyInfo class="oracle.portal.provider.v1.http.ProxyInformation">
  <httpProxyHost>www-proxy.us.oracle.com</httpProxyHost>
  <httpProxyPort>80</httpProxyPort>
</proxyInfo>
```

Change the `httpProxyHost` and `httpProxyPort` proxy settings or remove these settings if you do not use proxy. Restart the OC4J instance to test if this resolves the problem.

B.3 Diagnosing OmniPortlet Problems

This section provides information to help you troubleshoot problems you may encounter while using OmniPortlet.

To view errors that occur during the execution of OmniPortlet:

- Open the application log file:
`MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/application-deployments/portalTools/OC4J_Portal_default_island_1/application.log`
or, if you are using a standalone OC4J instance:
`OC4J_HOME/j2ee/home/application-deployments/portalTools/application.log`
- Display the HTML source (for example, in Microsoft Internet Explorer browser, choose **View > Source**), and locate the errors embedded in the output HTML as comments.

To alter the logging level of the OmniPortlet Provider:

- Open the `web.xml` file and modify the `context-param` value of `oracle.portal.log.LogLevel` to the possible values ranging from 1 to 8 (where 8 means debug). The `web.xml` file is located at:
`MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/applications/portalTools/omniPortlet/WEB-INF/web.xml`
or, if you are using a standalone OC4J instance:
`OC4J_HOME/j2ee/home/applications/portalTools/omniPortlet/WEB-INF/web.xml`

The OmniPortlet errors that you are most likely to encounter, and possible solutions, are:

- [OmniPortlet Cannot Access the Specified URL](#)
- [Portlet Content Is Not Refreshed](#)

B.3.1 OmniPortlet Cannot Access the Specified URL

Your OmniPortlet displays errors or does not display the correct content.

Problem 1

The URL is not active.

Solution 1

Type the URL directly in your browser address field to test its validity.

Problem 2

If a proxy server is required to reach the site, the proxy settings are not valid. The following messages may display:

```
Failed to open specified URL.  
Cannot open the URL specified because of connection timeout.
```

Solution 2

Check that your proxy settings are valid by clicking **Edit** for the HTTP Proxy Setting in the OmniPortlet Provider Test Page.

Problem 3

The message `OmniPortlet timed out` displays in your OmniPortlet.

Solution 3

1. If a proxy server is required to reach the site, see [Solution 2](#).
2. If the URL request takes a long time to process (for example, it executes a long running query), try increasing the timeout value (in seconds) in the OmniPortlet `provider.xml` file in `MID_TIER_ORACLE_HOME/j2ee/OC4J_Portal/applications/portalTools/omniPortlet/WEB-INF/providers/omniPortlet`. If you change the timeout value, you also need to do the following:
 - Bounce your middle-tier.
 - Increase the provider registration Timeout value of the OracleAS Portal instances with which this provider is registered.

Problem 4

If HTTP authentication is required and the user name and password are missing or not valid, the following error message displays:

```
Authorization failed when connecting to the URL specified.  
Provide correct user name and password to connect.
```

Solution 4

To configure the Secured Data (Web Clipping) Repository Setting, click **Edit** on the OmniPortlet Provider Test Page. On the Source tab, click **Edit Connection** and enter a valid user name and password on the Connection Information page. To enter the connection information, the Secured Data Repository must be already be configured. To configure its settings, click **Edit** on the OmniPortlet Provider Test Page.

Problem 5

If opening a URL to an HTTPS site with a certificate and the certificate is identified as not valid, the following error message displays in the portlet:

```
SSL handshake failed for HTTPS connection to the specified URL.  
The certificate file needs to be augmented.
```

Solution 5

See the *Oracle Application Server Portal Configuration Guide*.

Problem 6

If the proxy server requires authentication and the user name and password are missing or not valid, the following error message displays:

```
Invalid or missing user proxy login information.
```

Solution 6

Check that your proxy server user name and password are valid. Refer to [Section B.4.5, "HTTP Error Code 407 When Clipping Outside Firewall"](#) for more information.

B.3.2 Portlet Content Is Not Refreshed

After changing portlet properties in the Edit Defaults page, your portlet content is not refreshed.

Problem 1

OracleAS Web Cache invalidation is not configured properly.

Solution 1

See Section I.2.1.3 "Configuring Caching (PDK Only)" in the *Oracle Application Server Portal Configuration Guide*.

Problem 2

You have personalized the portlet.

Solution 2

See [Section B.3.3, "Edit Defaults Changes are Not Reflected in the Personalized Portlet"](#).

B.3.3 Edit Defaults Changes are Not Reflected in the Personalized Portlet

When you personalize the portlet at runtime using the **Personalize** link, the new property values are not reflected in the personalized version of the portlet.

Problem

When you personalize the portlet, a complete copy of the personalization object file is created. Since all properties are duplicated, subsequent modifications through Edit Defaults are not reflected in the personalized version.

Solution

To ensure the latest changes are made to the portlet, click **Personalize** again (after the modifications via Edit Defaults), then select the **Reset to Defaults** option.

B.4 Diagnosing Web Clipping Problems

This section provides information to help you troubleshoot problems you may encounter while using the Web Clipping provider or Web Clipping Studio:

- [Setting Logging Levels](#)
- [Reviewing Error Messages](#)
- [Checking the Status of the Provider with the Test Page](#)
- [Problem Connecting to the Web Site for Clipping](#)
- [HTTP Error Code 407 When Clipping Outside Firewall](#)
- [Cannot Clip a Page](#)
- [Images Not Retrieved with Clipping](#)
- [Resolving Problems with Migration of URL-based Portlets](#)

B.4.1 Setting Logging Levels

By default, the logging level of Web Clipping is set to level 3, which provides information about configuration, severe errors, and warnings. This level is reasonable for day-to-day operations. To view information useful for debugging, you should set the logging level to 8.

To set the logging level, edit the `web.xml` file, which is located at:

```
OracleHome/j2ee/OC4J_Portal/applications/portalTools/webClipping/WEB-INF
```

To set the level to 8 and display debugging information, set the value of the parameter `oracle.portal.log.LogLevel` as follows:

```
<context-param>
    <param-name>oracle.portal.log.LogLevel</param-name>
    <param-value>8</param-value>
</context-param>
```

After you make the change, restart the Web application.

B.4.2 Reviewing Error Messages

Errors that occur when accessing the Test Page or executing of the Web Clipping portlet are written to one of the following files:

```
OC4J_HOME/j2ee/home/application-deployments/portalTools/application.log
IAS_HOME/j2ee/OC4J_instance/application-deployments/portalTools/OC4J_instance_
default_island_1/application.log
```

B.4.3 Checking the Status of the Provider with the Test Page

You can use the Web Clipping Provider Test Page to determine if the provider is functioning properly. To access the Test Page, click **Web Clipping Provider** from the Portal Tools Application Welcome Page, which is located at:

```
http://host:port/portalTools
```

The Provider Test Page: Web Clipping is displayed. It provides the following information:

- Portlet information about the Web Clipping portlet. The Web Clipping provider contains only one portlet.

-
- Provider initialization parameters and values.
 - Provider status, with links to pages for editing the configuration.

For more information about using the Test Page, see the "Administering Web Clipping" appendix in the *Oracle Application Server Portal Configuration Guide*.

B.4.4 Problem Connecting to the Web Site for Clipping

You encounter difficulties making or maintaining connections to the Web site containing the clipping.

Problem 1

If you cannot access the Web site using Web Clipping Studio, you may be using an incorrect URL.

Solution 1

To be sure a URL is correct, test the URL that you want to clip in a browser before you attempt to clip it. Also test the URL to be sure that it is accessible from the provider middle tier.

Problem 2

The connection times out when attempting to browse to any Web site and your environment uses a proxy server to connect to HTTP servers outside a firewall.

Solution 2

Make sure that the proxy servers are configured correctly.

To configure the proxy servers, go to the Web Clipping Provider Test Page, as described in [Section B.4.3, "Checking the Status of the Provider with the Test Page"](#). In the Web Clipping Provider Test Page, click **Edit** in the **Actions** column of the **HTTP Proxy** row. In the Edit Provider page, specify the **HTTP Proxy Host** and the **HTTP Proxy Port** for the HTTP Proxy.

For access to servers inside the firewall, you can specify a list of domain names that need not go through the firewall by selecting **No Proxy for Domains beginning with** and entering the URL. You do not need to restart OC4J for the new settings to take effect.

For more information about configuring proxy servers, see the "Administering Web Clipping" appendix of the *Oracle Application Server Portal Configuration Guide*.

Problem 3

Your configuration includes a load balancer and you experience difficulty making or maintaining connections while attempting to add a clip to a Web Clipping portlet.

Solution 3

The configuration was not set up correctly:

- If multiple OC4J instances are set up behind a load balancer, the Web Clipping Repository and HTTP proxy must be configured identically on all OC4J instances before you join them to the load balancer.

Web clippings have definitions that must be stored persistently in the Web Clipping Repository hosted by an Oracle Database server. In a multiple middle-tier environment, all instances of OC4J must store definitions in the same repository.

In addition, all instances of OC4J must have identical HTTP proxy configurations.

- The Load Balancer must be session-enabled. If it is not, the first request connects, but subsequent requests, which may be routed to a different instance, fail.

For more information about configuring with a load balancer, see the "Performing Advanced Configuration" chapter of the *Oracle Application Server Portal Configuration Guide*.

Problem 4

You use a reverse proxy, but cannot make a connection.

Solution 4

Make sure that the reverse proxy server is configured correctly. See the "Performing Advanced Configuration" chapter of the *Oracle Application Server Portal Configuration Guide* for information about configuring a reverse proxy.

Problem 5

You cannot connect and the error log contains a message about denying logon to the database. (See [Section B.4.1, "Setting Logging Levels"](#) for information about the error log.)

Solution 5

The PORTAL schema password for the infrastructure database may have been modified manually and it may not match the password stored in Oracle Internet Directory. Refer to the *Oracle Internet Directory Administrator's Guide* for more information about setting the password.

B.4.5 HTTP Error Code 407 When Clipping Outside Firewall

The proxy servers are configured for proxy authentication and you receive HTTP error code 407 when you attempt to clip a page outside the firewall.

Problem

The proxy servers are configured for proxy authentication, but you have not configured proxy authentication.

Solution

You must manually configure proxy authentication. Web Clipping supports both global proxy and per-user authentication. You can specify the realm of the proxy server and whether all users login automatically with a provided user name and password, each user logs in with an individual user name and password, or all users log in with a specified user name and password. For more information about configuring proxy authentication, see the "Administering Web Clipping" appendix of the *Oracle Application Server Portal Configuration Guide*.

B.4.6 Cannot Clip a Page

You can connect to the Web site, but you cannot clip the page.

Problem

The page may be overpopulated with IFrames.

Solution

View the page in a browser and look at the page source. If it contains IFrames, start browsing in Web Clipping Studio using the URL pointed to by the IFrame `src` attribute.

B.4.7 Images Not Retrieved with Clipping

Images in a Web clipping are not retrieved with the rest of the clipping.

Problem

Because images are treated as links (using the `src` attribute of the `IMG` tag), images from clipped sites are served directly from the original sites. If the images require that you enable proxy settings during creation of the clipping, then disabling the browser proxy setting disables the viewing of the images in a clipping.

Solution

Enable proxy settings in the browser.

B.4.8 Resolving Problems with Migration of URL-based Portlets

You can migrate URL-based portlets that are stored in a `provider.xml` file to Web Clipping portlets. This section explains how to troubleshoot issues that arise as you migrate your portlets to Web Clipping portlets. For more information on the migration process itself, refer to [Section 5.5, "Migrating from URL-Based Portlets"](#).

B.4.8.1 File Not Found Exception When Running Migration Tool

When you run the migration tool, you receive the following exception:

```
Exception in thread "main" java.io.FileNotFoundException:
/wrongpath/somservice.properties (No such file or directory)
  at java.io.FileInputStream.open(Native Method)
  at java.io.FileInputStream.<init>(FileInputStream.java:103)
  at oracle.webdb.wcs.client.urlservices.UrlServicesMigrator.importService
      (UrlServicesMigrator.java:631)
  at oracle.webdb.wcs.client.urlservices.UrlServicesMigrator.main
      (UrlServicesMigrator.java:724)
  at oracle.webdb.wcs.WcWebdbMain.main(WcWebdbMain.java:60)
```

Problem

The files you specified for the deployment properties file for either the URL-based portlets service or the Web Clipping Portlet service do not exist.

Solution

Verify the path to both service deployment properties files in the argument list to see if they point to the correct location.

B.4.8.2 Null Pointer Exception When Running Migration Tool

When you run the migration tool, you receive the following exception:

```
Exception in thread "main" java.lang.NullPointerException
  at java.util.Hashtable.put(Hashtable.java:375)
  at java.util.Properties.setProperty(Properties.java:97)
  at oracle.webdb.wcs.client.urlservices.UrlServicesMigrator.setRepository
      (UrlServicesMigrator.java:415)
  at oracle.webdb.wcs.client.urlservices.UrlServicesMigrator.main
```

```
(UrlServicesMigrator.java:733)  
at oracle.webdb.wcs.WcWebdbMain.main(WcWebdbMain.java:58)
```

Problem

The Repository settings are not configured for the Web Clipping Provider.

Solution

See [Section 5.5.1, "Preparing for Migration"](#) for information about steps you must take before running the migration tool.

B.4.8.3 Target provider.xml is Already Migrated Error

When you run the migration tool, you receive the following error:

```
Error: Target provider.xml is already migrated.
```

Problem

The `provider.xml` file pointed to by the URL-based portlets service deployment properties file has already been migrated. The provider definition class specified in the `provider.xml` file is already in `WcProviderDefinition`.

Solution

If you want to redo the migration, rename your service in both the deployment properties file and the entire directory name under `WEB-INF/providers` and then run the migration again.

B.4.8.4 Cannot Migrate provider.xml with Class Error

When you run the migration tool, you receive the following error:

```
Error: Can't migrate provider.xml with class <someclass>
```

Problem

The `provider.xml` file pointed to by the URL-based portlets service deployment properties file contains a provider class name that does not match the one used by URL-based portlets. Specifically, the Provider class name specified in the file is not `oracle.portal.provider.v2.http.URLProviderDefinition`. The migration tool is intended to migrate URL-based Portlet provider definitions, not any other kind of provider definitions. Even those classes which sub-class from URL-based portlets provider definition will not be correctly migrated.

Solution

You cannot migrate this service.

B.5 Need More Help?

You can find more solutions on Oracle *MetaLink*, <http://metalink.oracle.com>. If you do not find a solution for your problem, log a service request.

See Also: *Oracle Application Server Release Notes*, available on the Oracle Technology Network:
<http://www.oracle.com/technology/documentation/ias.html>

Manually Packaging and Deploying PDK-Java Providers

This appendix explains how to manually package your PDK-Java provider implementation into a portable format suitable for deployment on the Oracle Application Server or another J2EE application server. It then explains how to deploy the resulting EAR file in an Oracle Application Server environment and subsequently register it with one or more OracleAS Portal instances.

Note: In general, we recommend that you package and deploy your providers via the tools available in Oracle JDeveloper. However, if you find that you must package and deploy your providers manually for some reason, we provide the information in this appendix for your reference.

- [Introduction](#)
- [Packaging and Deploying Your Providers](#)

Note: Throughout this chapter, you will see references to ORACLE_HOME. ORACLE_HOME represents the full path of the Oracle home, and is used in cases where it is easy to determine which Oracle home is referenced. The following conventions are used in procedures where it is necessary to distinguish between the middle tier, OracleAS Infrastructure, or Oracle Application Server Metadata Repository Oracle home:

- MID_TIER_ORACLE_HOME, represents the full path of the middle-tier Oracle home.
 - INFRA_ORACLE_HOME, represents the full path of the Oracle Application Server Infrastructure Oracle home.
 - METADATA_REP_ORACLE_HOME, represents the full path of the OracleAS Infrastructure home containing the Oracle Application Server Metadata Repository.
-
-

C.1 Introduction

Before proceeding with packaging and deploying your provider, you must understand a couple of basic concepts.

- [WAR and EAR files](#)

- [Service Identifiers](#)

C.1.1 WAR and EAR files

WAR and EAR files are used to deploy applications on a J2EE application server, such as Oracle Application Server. The WAR and EAR files encapsulate all of the components necessary to run an application in a single file. These files make the deployment of an application very easy and consistent, reducing the possibility of errors when moving an application from development to test, and test to production.

- **WAR files** represent a Web application and include all the components of that Web application, including Java libraries or classes, servlet definitions and parameter settings, JSP files, static HTML files, and any other required resources.
- **EAR files** represent an enterprise application.

C.1.2 Service Identifiers

PDK-Java enables you to deploy multiple providers under a single adapter servlet. The providers are identified by a service identifier. When you deploy a new provider, you must assign a service identifier to the provider and use that service identifier when creating your provider WAR file. The service name is used to look up a file called *service_id.properties*, which defines the characteristics of the provider, such as whether to display its test page.

For example, you can register the PDK-Java samples provider using the following URL and a service identifier of `urn:sample`:

```
http://mycompany.com/jpdk/providers
```

Alternatively, you can use a URL of the form:

```
http://mycompany.com/jpdk/providers/sample
```

where the provider name (sample) is appended to the URL of the PDK-Java samples provider. In this case, you should leave the Service Id field blank when registering the provider.

You can specify the service identifier separately in cases where multiple portals are sharing the same provider. By registering each portal with a different service identifier, you can specify the provider properties for each consumer independently.

Once your provider has been deployed, you must use the correct service identifier to register your provider with OracleAS Portal, which ensures that requests are routed to the correct provider. If the adapter servlet receives a request without a service identifier, the request goes to the default provider.

Note: If you do not know the service identifier, check the provider test page or contact the administrator of the provider. If you are using the Federated Portal Adapter, the URL points to the adapter, not the provider, thus you must enter a value for this field. In this case, the service identifier would be `urn:` followed by the name of the database provider.

C.2 Packaging and Deploying Your Providers

The following sections show the steps you must perform to package and deploy a provider manually:

-
- [Packaging Your Provider](#)
 - [Deploying Your EAR File](#)
 - [Testing Deployment](#)
 - [Setting Deployment Properties](#)
 - [Securing Your Provider](#)
 - [Registering Your Provider](#)

C.2.1 Packaging Your Provider

The steps in this section explain how to manually package a WAR file. If you are familiar with one of the various utilities for assembling WAR files, you are free to assemble your WAR file that way.

- [Preparing Your Directories](#)
- [Specifying Your Default Service](#)
- [Creating Your WAR File](#)
- [Creating Your EAR File](#)

C.2.1.1 Preparing Your Directories

In preparation for creating your WAR file, you need to perform the following steps:

1. Create a working directory where you can collect the necessary files.
2. Extract the `template.war` file from `/pdk/jpdk/v2/template.war` into your working directory. Make sure that you extract the file paths, too.
3. If your provider needs any additional JAR files, add them to the `WEB-INF/lib` directory.
4. If your provider needs any additional Java classes not contained in a JAR file, add them to the `WEB-INF/classes` directory. Make sure that you save the class file in a directory structure that corresponds to their Java package names.
5. Add any static HTML files, JSPs and images to your working directory. Create subdirectories as needed to organize the files. Note that the subdirectories will become part of the path necessary to access the HTML or JSP files.
6. Create a subdirectory for your provider under the providers directory. The name of the subdirectory is the service identifier (name) of your provider.
7. Place your provider definition file in the subdirectory you just created.
8. Copy the `_default.properties` file to `$service_name.properties` and edit it to reflect your provider's configuration.
9. Edit `_default.properties` to reflect the configuration settings of your default provider. The default provider is accessed if a service identifier is not specified in a request. Refer to [Section C.2.1.2, "Specifying Your Default Service"](#) for more information on this step.
10. If you use servlets to render content, edit `WEB-INF/web.xml` to add your servlets to the list of pre-defined servlets. Be careful not to remove the entries for servlets required by PDK-Java.

C.2.1.2 Specifying Your Default Service

The default service is the provider that receives any request without a service name. You specify a default provider by editing the `_default.properties` file in the deployment directory of your WAR file.

Edit the definition entry to point to the provider definition file that represents your default provider. Paths should be relative to the WEB-INF directory within your WAR file, not the physical location of the file in the file system.

The `_default.properties` file looks similar to the following:

```
serviceClass=oracle.webdb.provider.v2.adapter.soapV1.ProviderAdapter
loaderClass=oracle.portal.provider.v2.http.DefaultProviderLoader
showTestPage=true
definition=providers/sample/provider.xml
autoReload=true
```

C.2.1.3 Creating Your WAR File

Once you have specified the contents of your WAR file, you are ready to create the WAR file itself. To create the WAR file:

1. Zip the contents of the working directory you created in [Section C.2.1.1, "Preparing Your Directories"](#), including the subdirectory paths but not the working directory path itself.
2. Rename the resulting file to give it a meaningful name and change the extension to `.war`.

C.2.1.4 Creating Your EAR File

The steps below represent manual configuration of an EAR file. To create the EAR file:

1. Create another working directory for the creation of your EAR file.
2. Extract the `template.ear` file from `/pdk/jpdk/v2/template.ear` into your working directory. Make sure that you extract the file paths, too.
3. Open the `META-INF/application.xml` file that was contained in the template EAR file. It should look something like the following:

```
<?xml version "1.0">
<!DOCTYPE application PUBLIC "-//Sun Microsystems, Inc.
    //DTD J2EE Application 1.3//EN"
    "http://java.sun.com/j2ee/dtds/application_1_3.dtd">
<application>
  <display-name>Display Name of the Application</display-name>
  <description>Description of the application</description>
  <module>
    <web>
      <web-uri>yourwarfile.war</web-uri>
      <context-root></context-root>
    </web>
  </module>
</application>
```

[Table C-1](#) describes the elements of `application.xml`.

Table C-1 Elements of `application.xml`

Element	Description
<code><display-name></code>	Is the name of the application.

Table C-1 (Cont.) Elements of application.xml

Element	Description
<description>	Is a description of the application and its functions.
<web-uri>	Is the name of your WAR file.
<context-root>	Is the prefix you would like to map to your application by default (for example, /myapp).

4. Save `application.xml` back to the same location without changing the name of the file.
5. Copy the WAR file you created earlier into your working directory. Put it in the working directory itself, not a subdirectory.
6. Zip the contents of the working directory, including the subdirectory paths but not the working directory path itself.
7. Rename the resulting file to give it a meaningful name and change the extension to `.ear`.

C.2.2 Deploying Your EAR File

You can deploy your EAR file in any one the following ways depending upon your requirements:

- [Deploying with the Grid Control Console](#)
- [Deploying Manually with dcmctl](#)
- [Deploying Manually to Standalone OC4J](#)

C.2.2.1 Deploying with the Grid Control Console

To deploy your EAR file via the Grid Control Console, you must have PDK-Java installed in your target OC4J.

1. Start the Grid Control Console and navigate to the home page of the OC4J instance in which you configured PDK-Java (for example, `OC4J_Portal`).
2. On the Applications tab, click **Deploy EAR file**.
3. Enter the information in [Table C-2](#).

Table C-2 Application Tab Settings

Setting	Value
J2EE Application	Browse to the location of your EAR file in your local file system
Application Name	Enter the unique name you want to associate with your provider application.
Parent Application	Use default.

4. Click **Continue**. The URL mapping for Web Modules displays. The mappings will default to the context roots specified in `application.xml` (for example, /myapp), but you can change them to avoid clashing with the context roots of other deployed applications.
5. Click **Finish**. A summary appears with all of the information you entered.
6. Click **Deploy**.

7. Click **OK**.

Your provider application is now deployed to your Oracle Application Server instance. You should see the newly deployed application in the list of applications for the selected OC4J instance. Once you have successfully deployed your EAR file, you need to test the deployment. Refer to [Section C.2.3, "Testing Deployment"](#).

C.2.2.2 Deploying Manually with `dcmctl`

To deploy your EAR file via `dcmctl`, you must have PDK-Java installed in your target OC4J.

Note: Before using `dcmctl` to manage an Oracle Application Server instance, make sure you have no Grid Control Console processes managing that same instance. If multiple processes manage the same instance, you run the risk of inconsistencies or corruption in the data used to manage the instance.

You deploy your EAR file using the command-line deployment utility `dcmctl`: (Arguments in brackets are optional.)

```
cd MID_TIER_ORACLE_HOME/dcm/bin/  
./dcmctl deployApplication -f file -a app_name  
    [-co comp_name] [-enableIIOP] [-rc rootcontext] [-pa parent_name]
```

where:

file is the name of the EAR or WAR file you want to deploy.

app_name is the name of the application specified by the user in the original deployment.

comp_name is the name of the OC4J instance to which the application will be deployed. The default is the home instance. (Optional)

`enable IIOP` enables the Internet Inter-Orb Protocol. (Optional)

rootcontext is the base path used in the URL to access the Web module (for example, `http://hostname:port/context root`). This option applies only to the deployment of WAR files. (Optional)

parent_name is the parent application name. The parent application contains common classes used by child applications. (Optional)

Your provider application is now deployed to your Oracle Application Server instance. Once you have successfully deployed your EAR file, you need to test the deployment. Refer to [Section C.2.3, "Testing Deployment"](#).

C.2.2.3 Deploying Manually to Standalone OC4J

To deploy your EAR file to a standalone instance of OC4J, it must be a compatible version and have PDK-Java installed.

1. If OC4J is not already running, start it as a background process with the following commands:

On Microsoft Windows:

```
cd OC4j_HOME\j2ee\home  
start java -server -Xmx256m -jar oc4j.jar
```

On UNIX/Linux (Bourne shell):

```
cd OC4J_HOME/j2ee/home
java -server -Xmx256m -jar oc4j.jar &
```

where:

OC4J_HOME is your OC4J installation root directory (for example, D:\oc4j904).

Note: The `-Xmx256m` option specifies a maximum heap size of 256 Mb for the OC4J process, which is the recommended setting. You may raise or lower this setting to suit your application. If you encounter `java.lang.OutOfMemoryError` exceptions, you should raise this setting.

2. Deploy your EAR file using the following command:

```
java -jar admin.jar ormi://localhost admin admin_password -deploy
-deploymentName application_name -file ear_file_path
```

where:

`admin_password` is the OC4J administration password you set on installation.

`application_name` is the unique name given to the application for administrative purposes.

`ear_file_path` is the full path to your EAR file on the file system.

3. For each of the WAR files in your EAR file (as listed in `OC4J_HOME/j2ee/home/applications/application_name/application.xml`), bind the corresponding Web applications to a URI path on your Web site with the following command:

```
java -jar admin.jar ormi://localhost admin admin_password
-bindWebApp application_name web_app_name
file:OC4J_HOME/j2ee/home/config/http-web-site.xml context_root
```

where:

`web_app_name` is WAR file name without the `.war` extension (for example, `jpdk`).

`context_root` is the URI path prefix you would like to be mapped to that Web application (for example, `/myapp`).

Your provider application is now deployed to your Oracle Application Server instance. Once you have successfully deployed your EAR file, you need to test the deployment. Refer to [Section C.2.3, "Testing Deployment"](#).

C.2.3 Testing Deployment

To test your provider deployment, you access the provider test page with a URL of the following form:

```
http://host:port/context_root/providers
```

where:

`host` and `port` are the host name and port number of the HTTP listener for your target OC4J instance. In an Oracle Application Server installation with OracleAS Web

Cache installed, `port` should be the OracleAS Web Cache listener port (for example, 7777). In a standalone OC4J installation, the default HTTP port number is 8888.

`context_root` is the URI path prefix you mapped to the provider Web application on deployment (for example, `/myapp`) or the default one specified in `application.xml` in the case of a manual deployment with `dcmctl`.

For example:

```
http://my.host.com:7777/newProvider/providers
```

If your `.properties` file specifies `showTestPage=true`, you should see the familiar test page for your default provider. To view the test page for a specific provider service, you can append the service name to the URL. For example:

```
http://my.host.com:7777/newProvider/providers/myService
```

C.2.4 Setting Deployment Properties

In PDK-Java, you can specify a number of deployment properties via JNDI variables. [Table C-3](#) provides a list of these variables with descriptions.

Table C-3 JNDI Variables for Provider Deployment

Variable	Description
<code>oracle/portal/provider/global/log/logLevel</code>	Is the logging level (0-8) used by PDK-Java and applies to all providers.
<code>oracle/portal/service_name/showTestPage</code>	Is a Boolean flag that specifies whether a provider's test page is accessible. The default value is true.
<code>oracle/portal/service_name/maxTimeDifference</code>	Is the provider's HMAC time difference.
<code>oracle/portal/service_name/definition</code>	Is the location of the provider's definition file, <code>provider.xml</code> .
<code>oracle/portal/service_name/autoReload</code>	Is a Boolean auto reload flag. The default value is true.
<code>oracle/portal/service_name/sharedKey</code>	Is the HMAC shared key. It has no default value.
<code>oracle/portal/service_name/rootDirectory</code>	Is the location for provider customizations. It has no default value.

C.2.4.1 Setting the Variables

You can set the values of the variables in [Table C-3](#) as you would any other JNDI variables. Refer to [Section 7.2.4.2, "Setting JNDI Variable Values"](#) for information on how to set JNDI variables.

C.2.5 Securing Your Provider

When using the PDK-Java framework in a production environment, you should secure your providers. For more information on securing providers, refer to [Section 7.2.6, "Implementing Portlet Security"](#) and the *Oracle Application Server Portal Configuration Guide*.

C.2.6 Registering Your Provider

Once you have successfully deployed and verified your provider, you can register it as you would any other provider. Refer to [Section 6.6.2.5, "Registering and Viewing Your Portlet"](#) for more information about registering your provider.

OracleAS Portal Provider Test Suite

The OracleAS Portal Provider Test Suite performs sanity, performance, and unit tests on a Web provider without an installation of OracleAS Portal or Internet access from the provider machine. There are two types of utilities that are available to the user in the test suite.

- [Provider Test Page](#)
- [Test Harness](#)



You can download the OracleAS Portal Provider Test Suite from the Oracle Application Server Portal Developer Kit (PDK) page on OTN:

<http://www.oracle.com/technology/products/ias/portal/pdk.html>

Click [Download the JPDK Test Suite](#).

D.1 Provider Test Page

The provider test page provides a basic sanity test for the provider. It contains a list of portlets, servlet initialization arguments, and the version numbers of the `ptlshare` and `pdkjava` libraries. The provider test page is the simplest utility available for testing any Web provider. You access the test page by a URL after deploying the enterprise application or Web application on OC4J. You test the Web provider by accessing this URL from a browser:

```
http://server:port/application_name/providers/provider_name
```

For example, the PDK-Java comes with a sample application and portlets. The application is encapsulated in a WAR file, which in turn is encapsulated in an EAR file. When you deploy it, OC4J extracts the files and creates a directory structure with the sample portlets under:

```
ORACLE_HOME/j2ee/home/applications/jpdk
```

To view the test page for this provider, you would use this URL:

```
http://server:port/jpdk/providers/sample
```

When you access the test page, the SOAP servlet validates the XML provider definition, `provider.xml`, ensuring that the corresponding provider is well formed. This validation is useful for debugging deployment issues with your provider before attempting to register it with a OracleAS Portal. If you successfully deploy your Web application on OC4J, you receive a success message on the test page.

You can turn the test page on and off by using the JNDI variable `oracle/portal/provider/provider_name/showTestPage` to true or false.

Once a provider is tested and in service you might want to restrict access to the test page. For more information about retrieving and setting JNDI variables, refer to [Section 7.2.4, "Using JNDI Variables"](#).

D.2 Test Harness

The test harness is a command line utility for unit- and performance-testing your providers without accessing an OracleAS Portal instance. The test harness sends HTTP requests to the target Web provider and records the responses for further analysis. The responses are logged into an XML file. Performance statistics are logged into another file for analysis.

The test harness provides considerable flexibility:

- You create your own test definition. Based on the information in the test definition, the harness sends requests to the provider. The test definition file is in XML format and lists request instances to send to the target Web provider.
- The information returned by the provider is stored in a standard XML file, which makes it easier to understand and analyze.
- You can perform load testing of the Web provider.

D.2.1 Test Definition File

The test definition file is an XML file that lists the request instances for a particular test. You can optionally subdivide the request instances into request groups within the test definition file. You can include the details of the request instances in the test definition file or refer to a request library XML file that defines the instance details.

In addition to the request instances, the test definition file also includes information about the host and port of the target Web provider and any pre-processors to which it needs to be sent. A pre-processor enables you to include application-specific logic in the request instances at runtime in the test harness. For example, a pre-processor might check the validity of XML in the SOAP messages being sent to the target Web provider. The test harness provides three built-in pre-processors:

- OracleAS Portal pre-processor
- Validation-based caching pre-processor
- HMAC (Hashed Message Authentication Checksum) pre-processor

The following sample test definition file illustrates the format and content of the file:

```
<xml version="1.0" encoding="ISO-8859-1">
<testDefinition version="0.1">
<testDefinition>
  <defaultHost>machine.name.com</defaultHost>
  <defaultPort>80</defaultPort>
  <defaultPath>/jpdk/providers/sample</defaultPath>
  <property name="portletId" value="1"/>
  <preProcessorDefinitions>
    <preProcessor
      class="oracle.webdb.testharness.preprocessor.PortalPreProcessor">
      <name>portal</name>
    </preProcessor>
    <preProcessor class="oracle.webdb.testharness.preprocessor.HMACPreProcessor">
      <name>hmac</name>
      <sharedKey>1234567890aBcDeFgHiJ</sharedKey>
    </preProcessor>
  </preProcessorDefinitions>
</testDefinition>
</testDefinition>
</xml>
```

```

</preProcessorDefinitions>
<requestGroup id="register">
  <description>Carries out necessary registrations</description>
  <cycles>1</cycles>
  <threads>1</threads> -- increase the number to load test the Web provider.
  <requestInstance id="register_provider">
    <libraryId>pt1902</libraryId>
    <definitionId>registerProvider</definitionId>
    <runs>1</runs>
  </requestInstance>
  <requestInstance id="register_portlet">
    <libraryId>pt1902</libraryId>
    <definitionId>registerPortlet</definitionId>
    <runs>1</runs>
  </requestInstance>
</requestGroup>
<requestGroup id="show">
  <description>Carries out work necessary to show the portlet</description>
  ...
  ...
</requestGroup>
  ...
</testDefinition>

```

D.2.2 runTest Command

The `runTest` command invokes the test harness with the specified options using the specified test definition.

```
runTest options test_definition
```

Table D-1 describes the command options for `runTest`.

Table D-1 *runTest Options*

Option	Description
<code>-n testname</code>	Assigns the specified name to this run. Defaults to a date-time name.
<code>-g groupId</code>	Is a comma separated list of the identifiers of the request groups in the test definition file to be run for this test. To run all groups, specify <code>--all-groups</code> .
<code>-p perfLogFile</code>	Is the name of the performance log file. Defaults to the test name. To disable performance testing, use <code>--no-perf</code> .
<code>-l resLogFile</code>	Is the name of the response log file. Defaults to the test name.
<code>-v resLogLevel</code>	Is the level of response logging (MIN HEADERS ALL). Default is ALL.
<code>-c csvFile</code>	Is the name of the response data CSV file. Default is to not generate it.
<code>-s ctlFile</code>	Is the name of the response data ctl file. Default is to not generate it.
<code>--no-perf</code>	Switches off all logging of performance data.
<code>--all-groups</code>	Runs all groups in the test definition.
<code>-verbose</code>	Produces verbose informational logging.

D.2.3 Running a Test with Test Harness

In order to test Web providers using the test harness, do the following:

1. Extract the `pdktestharness.zip` file to a convenient location. This will create a directory called `pdktest` to which all the test harness files are extracted.
2. Set an environment variable called `PDKTEST_HOME` to point to the location created in the previous step. For example, if you extracted to your D drive, you would now have a directory called `D:\pdktest`. Set the value of `PDKTEST_HOME`, to `D:\pdktest`. The Test Harness provides executable scripts in the `bin` directory.
3. Create a test definition file similar to the one in [Section D.2.1, "Test Definition File"](#).
4. Invoke the `runTest` command as described in [Section D.2.2, "runTest Command"](#).

Glossary

About mode

An optional **portlet Show mode** that displays information about the portlet's copyright, version, and author.

access control list

See **ACL**.

ACL

Access Control List. A list of groups and users authorized for specific access to an **object**.

add-in

See **extension**.

advanced search

A search engine that enables users to:

- Find content that contains any or all terms in the search string.
- Search selected **page groups**, or search across all page groups.
- Restrict a search to a particular **page, category, perspective, item type, or attribute**.

If **Oracle Text** is installed and enabled, all text attributes and the actual content of documents and URLs are searched. If Oracle Text is not installed, or is disabled, the following **metadata** is searched: item attributes (Display Name, Description, Keywords, and Author), page attributes (Display Name, Description, and Keywords) and category/perspective attributes (Display Name and Description).

If Oracle Text is installed and enabled, you can also use advanced search to perform near, soundex, and fuzzy searches.

See also **search portlet**. Contrast with **basic search** and **custom search**.

API

Application Programming Interface. A set of exposed data structures and functions that an application can use to invoke services on a portal **object**, such as a **portlet, page, or page group**. Note that OracleAS Portal APIs are exposed through the **PDK** available from the Oracle Portal Developer Kit (PDK) page on OTN:

<http://www.oracle.com/technology/products/ias/portal/pdk.html>

Application Programming Interface

See [API](#).

Application Service Provider

See [ASP](#).

approval notification

A message in the Notification portlet indicating that a user whose content requires approval has created or updated an [item](#). The intended recipients of approval notifications ([approvers](#)) relating to a particular page group or page are identified in an [approval process](#). An approver may respond to the notification by approving or rejecting the item in question.

approval process

A series of one or more steps that determines which users (or [groups](#)) need to review content that requires approval before it can be published. Each step in an approval process must have one or more [approvers](#). Routing to the approvers can be in serial (one at a time) or in parallel (all at once), and each step can be defined to require a response (either an approval or a rejection) by any one member or by all members. Once the required number of responses is received during a step, the process continues to the next step. The process ends when the item is rejected, or the final step is reached and the document is approved.

approver

A user identified in a page group or page [approval process](#), either explicitly or implicitly through group membership, as someone who needs to review content that requires approval before it can be published. An approver may choose to approve or reject such content.

ASP

Application Service Provider. A service that provides remote hosting of applications, maintaining and operating the hardware, software, and other resources required to run the applications. A good example is Oracle Portal Online (<http://portal.oracle.com>), a hosted subscription service that provides the features of OracleAS Portal to smaller businesses and organizations who want to build [portals](#) but do not have the resources in-house to build and manage them.

attribute

A portal [object](#) that stores information (or [metadata](#)) about an [item](#) or [page](#): for example, Create Date, Expire Date, or Author. A [page group administrator](#) can create custom attributes to extend the functionality of [item types](#) and [page types](#). For example, a base attribute on a file is Display Name; a custom attribute might be a check box to indicate whether the file is confidential. Custom attributes are useful for assigning unique, searchable identifiers to items.

authenticated user

A user who is logged on to a [portal](#). By default, authenticated users can access and, based on privileges granted to the user, act on certain portal [objects](#), such as [pages](#). Contrast with [public users](#), who can access public content only.

authorization

The evaluation of security constraints to send a message or make a request. Authorization uses specific criteria—authentication and restriction—to determine whether the request should be permitted.

authorized user

See [authenticated user](#).

banner

See [region banner](#). See also [navigation page](#).

base attribute

See [attribute](#).

base item type

See [item type](#).

base page type

See [page type](#).

basic search

A search engine that enables users to find content that contains a specific search string.

If [Oracle Text](#) is installed and enabled, all text [attributes](#) and the actual content of documents and URLs are searched. If Oracle Text is not installed, or is disabled, the following [metadata](#) is searched: item attributes (Display Name, Description, Keywords, and Author), page attributes (Display Name, Description, and Keywords) and category/perspective attributes (Display Name and Description).

See also [search portlet](#). Contrast with [advanced search](#) and [custom search](#).

basic search box item

A navigation item that users can add to a [page](#) to enable other users to perform basic searches. The search box can initiate a search of all [page groups](#) or a specified subset of page groups.

batch job

The process of running a [Portlet Builder portlet](#) in the background using the OracleAS Portal batch job facility. An end user can run a portlet in batch mode by selecting options on the portlet's [personalization form](#). Batch processing is useful if the portlet is based on a large amount of data, if the portlet displays many rows of data, or if the job may take a long time to run.

bind variable

A variable in a SQL statement that must be replaced with a valid value or address of a value in order for the statement to execute successfully. Portlet developers typically use bind variables (for example, dept) to display a [parameter entry field](#) in a [portlet's personalization form](#). The entry field enables end users to choose the data that the portlet will display.

bookmark

See [favorite](#).

breadcrumbs

See [page path item](#).

Builder page

See [Portal Builder page](#).

bulk load

See [zip file item](#).

caching

The act of storing frequently accessed information, typically Web pages or [portlets](#) in OracleAS Portal, in a location where it can be accessed quickly to avoid frequent content generation. For example, [Oracle Application Server Web Cache](#) stores dynamically-generated portlets in its memory, then serves them to the [PPE](#) when there is a request for the specified portlet. This storage reduces the total time spent handling the request by avoiding connections to the back-end database and other Web sites.

See also [expiry-based caching](#), [invalidation-based caching](#), [system level caching](#), [user level caching](#), and [validation-based caching](#).

calendar

A [portlet](#) created with the [Portlet Builder](#) that displays the results of a SQL [query](#) in calendar format.

call interface

The call interface displays the arguments that were selected when a [Portlet Builder portlet](#) was originally created or last edited.

category

A predefined [attribute](#) used to group or classify [pages](#), [items](#), and [portlets](#) in a [page group](#). A category helps users answer the question: *What is this item or page?* For example, in a travel page group, you might have categories for maps, snapshots, and hotel reviews. Users can assign only one category to a particular item or page.

See also [perspective](#).

chart

A [portlet](#) created with the [Portlet Builder](#) that displays the results of a SQL [query](#) as a chart, such as a bar chart, pie chart, or line chart. Bar charts are based on at least two table or view columns: one that identifies the bars on the chart and another that calculates the size of the bars on the chart.

check out/check in

A mechanism that allows a user to lock an item, by checking it out, so that other users cannot edit that same item. This prevents users from overwriting each others changes. After editing the item, the user releases it by checking it back in, making it available again for other users to edit.

child object

An object that is part of a hierarchy. For example, sub-pages, sub-categories, and sub-perspectives are child objects of a [page](#), [category](#), and [perspective](#) respectively.

See also [manifest](#).

child page

In **Oracle Instant Portal**, a page created beneath a **top-level page**. Child pages are listed along the left side of the top-level page to which they belong, in the **navigation area**, and usually support the top-level page's main theme. You can add, delete, re-position, or edit child pages right in the navigation area, assuming you have the appropriate privileges.

CHTML

Compact HTML. A subset of **HTML** recommendations, designed for small devices.

classification

Categories and perspectives are used to classify the content of a **page** or **item** so that it is easy for users to locate that content during a search.

See also **category** and **perspective**.

cluster

A database **object** used to store tables that are related to one another and that are often joined together in the same area on a disk.

community

See **Portal Community**.

compact HTML

See **CHTML**.

content area

In **Oracle Instant Portal**, refers to the area in which a **page's items** (or content) appear, on the right side of the screen.

content contributor

A user who has the appropriate privileges to add **items** to a **page**. Appropriate page privileges include *Manage Content* and *Manage Items With Approval*. Appropriate item privileges include *Manage*, *Edit*, and *View*.

content item type

A means of classifying the actual content of an **item** that is being uploaded to a **page**, such as a document, text, or an image.

Built-in content item types are:

- **file item** and **simple file item**
- **text item** and **simple text item**
- **URL item** and **simple URL item**
- **image item** and **simple image item**
- **image map item**
- **PL/SQL item** and **simple PL/SQL item**
- **page link item** and **simple page link item**
- **zip file item**

See also **item type**. Contrast with **navigation item type**.

content repository

The OracleAS Portal schema within the [Oracle Application Server Metadata Repository](#) that contains the content and [metadata](#) associated with a particular portal instance.

Contribute privileges

A privilege level on an [Oracle Instant Portal](#) page that allows the user to add, edit, move, or delete items on the page. A user with Contribute privileges also has all [View privileges](#).

CSS

Cascading Style Sheet. A simple mechanism for adding style, such as fonts, colors, and spacing, to Web documents.

current version

The version of an [item](#) that is displayed on the [page](#). The current version is not necessarily the most recent version of the item.

See also [versioning](#).

custom attribute

See [attribute](#).

custom item type

See [item type](#).

custom page type

See [page type](#).

custom provider

A type of [provider](#) that enables you to create and maintain [portlets](#) that access customer-specific content or applications. You can build custom portlets in OracleAS Portal either declaratively or programmatically.

custom search

A search engine that enables users to define a variety of searches against information stored in the OracleAS Portal schema of the [Oracle Application Server Metadata Repository](#). By editing the defaults of the Custom Search portlet, you can define unique search forms and search results pages that meet the specific search requirements, or configure portlets that execute and return results based on predefined search criteria.

If [Oracle Text](#) is installed and enabled, all text attributes and the actual content of documents and URLs are searched. If Oracle Text is not installed, or is disabled, the following [metadata](#) is searched: item attributes (Display Name, Description, Keywords, and Author), page attributes (Display Name, Description, and Keywords) and category/perspective attributes (Display Name and Description).

See also [search portlet](#). Contrast with [advanced search](#) and [basic search](#).

DAD

Database Access Descriptor. A set of values that specify how an application connects to an Oracle database to fulfill an HTTP request. The information in the DAD includes the user name (which also specifies the schema and the privileges), password,

connect-string, error log file, standard error message, and Globalization Support parameters such as language, date format, date language, and currency.

Database Access Descriptor

See [DAD](#).

database administrator

See [DBA](#).

database object

See [object](#).

database provider

A type of [provider](#) that is written as a PL/SQL [stored procedure](#) and is used to create [portletlets](#) that reside in the database. One example of a database provider is a provider built using the [Portlet Builder](#) to provide form, report, and chart portlets.

Contrast with [Web provider](#).

data portlet

A [portlet](#) built using the [Portlet Builder](#) that displays data in a spreadsheet format.

DAV

See [WebDAV](#).

DBA

Database Administrator. A user belonging to the DBA [group](#). By default, members in the DBA group have access to all OracleAS Portal product pages, and have the Manage privilege for all [pages](#), [page groups](#), [database providers](#), and administration.

default language

The language in which a [page group](#) is originally created. After creating the page group, you can add [translations](#) to it to enable users to add content in different languages.

default subscriber

The base [subscriber](#) that is installed along with the install of OracleAS Portal.

de-militarized zone

See [DMZ](#).

developer

A user who builds [portletlets](#) for others to include on their pages. Relies heavily on the APIs to extend the capabilities of OracleAS Portal; may frequently consult the [Portal Knowledge Exchange](#) or the forums for advice or inspiration.

Developer Services

See [Portal Developer Services](#).

DIP

Directory Integration Platform. The provisioning platform provided by [OID](#) to synchronize different directories and directory enabled applications.

direct access URL

Obsolete terminology. See [path-based URL](#).

Directory Information Tree

See [DIT](#).

Directory Integration Platform

See [DIP](#).

display name

An **object**'s external name used throughout OracleAS Portal, for example, in the [Navigator](#), on [pages](#), and in the page editor. When the object is published as a **portlet**, the display name is used as the title of the portlet in the [Portlet Repository](#).

Distinguished Name

See [DN](#).

DIT

Directory Information Tree. A hierarchical tree-like structure in [OID](#) consisting of the [DN](#)s of the entries.

DN

Distinguished Name. The unique name of a directory entry in [OID](#). It includes all the individual names of the parent entries back to the root. The DN tells you exactly where the entry resides in the directory's hierarchy. This hierarchy is represented by a directory information tree ([DIT](#)).

DMZ

De-militarized Zone. A computer host or small network inserted as a "neutral zone" between a company's private network and the outside public network. It prevents outside users from getting direct access to a server that has company data. A DMZ is an optional and more secure approach to a [firewall](#) and effectively acts as a [proxy server](#) as well. (The term comes from the geographic buffer zone that was set up between North Korea and South Korea following the UN police action in the early 1950s.)

document control

See [check out/check in](#).

draft item

An **item** that has been added to a [page](#) but has not yet been submitted for approval. In [View mode](#), a draft item is visible only to its author. When a draft item is ready for approval, the author can submit it, at which point the [approval process](#) is triggered. Draft items can be added to a page only if approvals are enabled for the [page group](#).

durable URL

A URL that uses the item's GUID (globally unique ID) to uniquely identify it. An item's GUID does not change so its durable URL will not break when the item is edited, renamed, moved, or imported to a different portal instance.

Contrast with [path-based URL](#).

dynamic page

A **portlet** created with the **Portlet Builder** that displays dynamic content on a page. The dynamic page wizard enables you to specify one or many PL/SQL blocks within HTML code to create a page. This code executes every time an end user requests the page.

dynamic URL

A URL that contains a query string (one or more parameters and the characters ? and &).

Contrast with **path-based URL**

edge side includes

See **ESI**.

Edit Defaults mode

An optional **portlet Show mode** that enables administrators to set the defaults of a portlet for all users.

Contrast with **Edit mode**.

Edit mode

1. Page editing: Edit mode enables an authenticated user with appropriate privileges to set **page** properties and to add, modify, or delete **portlets** and **items** on the page. To switch to Edit mode, the user clicks an **Edit** link on the page. There are three Edit mode views: **Graphical view**, **Layout view**, and **List view**.

See also **Mobile Preview mode** and **Pending Items Preview mode**.

2. Portlets: An optional portlet **Show mode** that enables personalization of the portlet on a per user, per instance basis.

Contrast with **Edit Defaults mode**.

3. **Oracle Instant Portal**: Opposite of **View mode**. When the **Edit mode handle bar** is clicked, thus displaying the edit toolbar and the Add Item and Add Page buttons, the page is said to be in Edit mode. This is the only state in which action may be taken upon the page.

Edit mode handle bar

In **Oracle Instant Portal**, the gray icon that one clicks to display the edit toolbar. When the edit toolbar is displayed, the page is in Edit mode. Users with View privileges on the page do not see the Edit mode handle bar.

email item

In **Oracle Instant Portal**, an item represented by a yellow envelope and, optionally, a title on the page. When the user clicks the envelope, an email editor is opened displaying a blank email. The email is pre-populated with the address specified by the item's creator.

Enterprise Manager

Oracle Enterprise Manager 10g is a component of the **Oracle Application Server** that enables administrators to manage Oracle Application Server services through a single environment. For example, an administrator can use Enterprise Manager to monitor the services that make up an OracleAS Portal instance, including **HTTP** services, the **PPE**, the Oracle database, **providers**, and **Oracle Ultra Search**.

enterprise portal

A common, integrated starting point that provides personalized access to relevant enterprise information sources. Enterprise portals enable site visitors to personalize their view of the resources available on the public Internet.

ESI

Edge Side Includes. A markup language to enable partial page caching (**PPC**) of HTML fragments.

event

An action within a portal triggers a corresponding event. Page designers can specify what should happen when these events occur, for example, by specifying that a particular event forces the reloading of the current **page**, and passes **parameters** to the newly loaded page.

Event servlet

The Event servlet implements the functionality of OracleAS Portal to allow for dynamic page navigation when accessing an event enabled **portlet**. The Event servlet runs in the same container as the **PPE**.

expandable rich text item

In **Oracle Instant Portal**, a type of text item designed to conserve space on the page. When in **View mode**, an expandable rich text item is represented by a white envelope, a title, and a summary. When the user clicks the envelope, the item expands to reveal the text associated with the item. Compare to a **rich text item**, in which the full text of the item is never hidden. Both expandable rich text and rich text items may contain images, hyperlinks, and tables, as well as any valid HTML code.

expiration period

The number of days after which, or an exact date on which, an **item** expires. After an item expires, it is viewable only by the item's or **page's** owner and the **page group administrator** in **Edit mode**. Expired items are removed from the database during a **system purge** of all expired items.

expiry-based caching

A **caching** method that uses a retention period to specify how long the item is valid in the cache before a refresh is required. When there is a request for the item beyond the retention period, it is refreshed in the cache.

Oracle Application Server Web Cache uses both expiry-based caching and invalidation-based caching. Any data saved in OracleAS Web Cache is considered valid until it is invalidated or it expires. For example, if expiry-based caching is specified for a fully assembled page, the page content remains valid in the cache for the specified retention period before it needs to be regenerated.

See also **invalidation-based caching** and **validation-based caching**.

expiry notification

A message automatically sent to a user or **group** indicating that an **item** on the **page** is about to expire. The notification is set up by the **page group administrator**.

explicit object

An object which is explicitly selected, from the Navigator or Bulk Actions, for export.

See also **manifest** and **referenced object**.

export

A method of creating a set of files (**transport set**) that contains **page groups**, **pages**, **portlets**, and other content from a single OracleAS Portal instance. You can then **import** this set of files into another Oracle Application Server instance.

eXtensible Markup Language

See **XML**.

extension

A Java class that extends the functionality of **Oracle JDeveloper**. For example the **PDK** includes an extension to aid with the development of portlets with Oracle JDeveloper.

external application

An application external to OracleAS Portal that is typically launched from the External Applications **portlet**. As each external application is configured by a **portal administrator**, users simply supply their user name and password information. The **Oracle Application Server Single Sign-On** will present these credentials for future authentication challenges.

external object

An object which is an external dependency of an **explicit object**. External objects ensure that the explicit objects perform on the target portal.

See also **manifest**.

favorite

A hyperlink in the Favorites **portlet** that provides quick access to a frequently visited **URL**, either inside or outside your company firewall. An **authenticated user** can personalize the Favorites portlet with his or her own preferred set of frequently accessed URLs.

Favorite Content area

An area on the **Oracle Instant Portal** home page in which a user's favorite content appears. Users select items for this area by clicking an icon that looks like a house beside the item. The Favorite Content area is different for each user.

favorite group

A collection of **favorites** (and favorite groups) that are usually logically related.

Federated Portal Adapter

See **FPA**.

file item

A type of **item** that a user can add to a **page**. When a user adds a file item to a page, the file is uploaded into the OracleAS Portal schema of the **Oracle Application Server Metadata Repository** and is displayed as a hyperlink on the page. When a user clicks the **display name** link, the file may be downloaded to the user's computer or displayed in the user's Web browser, depending on the file type and the configuration of the browser.

In **Oracle Instant Portal** file items are represented by a rectangle with a red asterisk at the top and, optionally, a title and summary. When the user clicks the icon, the file associated with the item opens in a second browser window.

firewall

A system (either hardware or software) that acts as an intermediary to protect a set of computers or networks from outside attack. It regulates access to computers on a local area network from outside, and regulates access to outside computers from within the local area network. A firewall can work either by acting as a **proxy server** that forwards requests so that the requests behave as though they were issued by the firewall machine, or by examining requests and attempting to eliminate suspect calls.

form

A **portlet** created with the **Portlet Builder** that provides a transactional interface to one or more database tables, views, or procedures. For example, you can use the Portlet Builder to build a form for entering new employee information into your Human Resources database.

See also **master-detail form**.

FPA

Federated Portal Adapter. The Federated Portal Adapter is a module in the portal instance (written in both Java and PL/SQL) that receives **SOAP** messages for a **Web provider**, parses the SOAP, and then dispatches the messages to a **database provider** as PL/SQL procedure calls. In effect, the Federated Portal Adapter makes a database provider behave exactly the same way as a Web provider, allowing users to distribute their database providers across database servers. All remote providers can be treated as Web providers, hiding their implementation (database or Web) from the user. The most common use is to share database providers (including page groups) owned by one portal instance among other portal instances.

frame driver

A **portlet** created with the **Portlet Builder** consisting of a Web page divided into two frames. A driving frame contains a SQL **query** that drives the contents of the second (target) frame.

Full Screen mode

An optional **portlet Show mode** that provides more content than can be shown in the portlet when it is sharing a page with other portlets.

function

A PL/SQL subprogram that performs a specified sequence of actions and then returns a value. Functions are usually small blocks of code written to perform a specific task within the scope of a larger application.

In a **page**, end users execute functions by clicking the title of a PL/SQL or custom item.

gist

An **Oracle Text** summary consisting of the document paragraphs that best represent the overall subject matter. You can use such summaries to skim the main content of the text or assess your interest in the text's subject matter.

global privilege

A **privilege** that grants a certain level of access to a user or **group** on all **objects** of a particular type. For example, you could grant a Web Designer group Manage privileges on all **styles**.

grantee

A user who is given privileges on an **object** by another user.

Graphical view

A page editing view that renders **page** content in-place on the page. Graphical view enables you to view pages and **items** as they appear on the finished page as you edit.

Contrast with **Layout view** and **List view**.

group

A collection of OracleAS Portal users who typically share a common need or interest; for example, Human Resources, Accounting, and so on. Groups make it easy to grant access to an **object** (such as a **page** or **portlet**) to several users at once. You can also use groups to implement user roles by assigning role-related privileges to a group, then adding users in that role. **OID** tracks the membership of OracleAS Portal groups.

group owner

A user who has the privilege to add or delete members from a **group**, or to delete the group itself. Groups can have more than one owner.

HA

High Availability. A collection of solutions to ensure that your applications meet the required availability to achieve your business goals, eliminating single points of failure with no or minimal outage in service.

Handheld Device Markup Language

See **HDML**.

HDML

Handheld Device Markup Language. A simple language to define hypertext-like markup content and applications for handheld devices with small display.

Help mode

An optional **portlet Show mode** that displays usage information about the functionality of the portlet.

hierarchy

A **portlet** created with the **Portlet Builder** that displays data from a self-referencing table or view. At least two columns in the table must share a recursive relationship. A hierarchy can contain up to three levels and display data such as employees in an organization chart or the hierarchical relationship between menus in a Web site.

home page

The **page**, defined within OracleAS Portal, that typically displays when logging on or when a user clicks a Home **smart link item**. The **portal administrator** chooses this page for **public users**; **authenticated users** may choose their own. If the portal administrator enables **mobile page** design, he or she can specify a separate mobile home page to display when the portal is accessed from a mobile device.

hosted site

See **stripe**.

HTML

Hyper Text Markup Language. A format for encoding hypertext documents that may contain text, graphics, and references to programs and other hypertext documents.

HTML content layout

A type of [HTML Template](#) that uses item-level [substitution tags](#) to define a formatting scheme for individual [regions](#). The HTML content layout repeats itself for each [item](#) or [portlet](#) in the region.

Contrast with [HTML page skin](#).

HTML page skin

A type of [HTML Template](#) that uses page-level [substitution tags](#) to control the appearance of the area surrounding page content. You can apply HTML page skins to [pages](#) or [Portal Templates](#).

Contrast with [HTML content layout](#).

HTML Template

A portal [object](#) built using your own [HTML](#) code that wraps around your [page](#) or [region](#) content. You can use an OracleAS Portal wizard or any third party HTML editor to build HTML Templates.

See also [HTML content layout](#) and [HTML page skin](#). Contrast with [Portal Template](#).

HTTP

Hyper Text Transfer Protocol. The underlying format, or protocol, used across the Web to format and transmit messages and determine what actions [Web servers](#) and browsers should take in response to various commands. HTTP is the protocol typically used between [Oracle Application Server](#) and its clients.

Hyper Text Markup Language

See [HTML](#).

Hyper Text Transfer Protocol

See [HTTP](#).

iasconfig.xml

The Portal Dependency Settings file, in which configuration settings for an OracleAS Portal instance are established. Each change to iasconfig.xml requires an update to the OracleAS Portal schema in the Oracle Application Server Metadata Repository, using the tool [ptlconfig](#).

IDE

Integrated Development Environment. A visual tool containing editors, debuggers, screen painters, object browsers, and the like.

ILS

Item Level Security. A mechanism that controls granular access to [items](#) on a given [page](#). ILS authorizes item managers to grant explicit item access to users and [groups](#) that take precedence over page-level privileges.

image item

A type of [item](#) that a user can add to a [page](#). You can add images in JPEG, GIF, or PNG formats.

In **Oracle Instant Portal**, as opposed to the images that are added as part of a **rich text item** or **expandable rich text item**, image items are designed to stand alone on the page. An image item is added through the Add Item icon; an image that is part of a text item is added through the Insert Image window.

image map item

A type of **item** that a user can add to a **page**. An image map is a single image with hotspots that, when clicked, link to other **URLs**. For example, you can create an image map of the world in which each continent is hyperlinked to more information about the continent.

import

A method of transporting content and **objects** (for example, **page groups**, **pages**, and **portlets**) into an OracleAS Portal instance. For example, you can import a page, its associated **style**, and its contents from one instance of OracleAS Portal to another.

index

An optional structure associated with a table used to locate rows of the table quickly, and (optionally) to guarantee that every row is unique.

in-place editing

In **Oracle Instant Portal**, the ability to add items or pages in context, as opposed to having to create these objects elsewhere and then add them to the page or portal.

Integrated Development Environment

See **IDE**.

internal image name

The name used to identify an image that has been uploaded to the portal. Uploaded images can be reused within the portal by referencing their internal names.

internal provider

A type of **provider** that makes **page group objects** (**pages**, **navigation pages**, and so on) available to instances of OracleAS Portal.

invalidation-based caching

A **caching** method where an item remains in the cache until it is explicitly invalidated. For example, a user may update an item, requiring the item in the cache to be invalidated. The next time there is a request for the invalidated item, it is refreshed in the cache.

Oracle Application Server Web Cache uses both expiry-based caching and invalidation-based caching. Any data saved in OracleAS Web Cache is considered valid until it is invalidated or it expires. When the information cached in OracleAS Web Cache becomes inaccurate, it must be invalidated. For example, **page metadata** saved in OracleAS Web Cache is invalidated when a page designer changes the page structure or when user privileges change. Likewise, a **portlet instance** is invalidated whenever it is personalized by an end user.

See also **expiry-based caching** and **validation-based caching**.

item

1. An individual piece of content (text, hyperlink, image, and so on) that resides on a **page** in an item **region**. Users with an appropriate privilege level can add items to a page. Item content and **metadata** are stored in the OracleAS Portal schema of

the [Oracle Application Server Metadata Repository](#). Items are rendered on the page according to the layout, [style](#), and [attribute](#) display defined for the item region.

See also [item type](#).

2. In [Oracle Instant Portal](#), the means through which content is added to a page. Available item types are [rich text item](#), [expandable rich text item](#), [file item](#), [URL item](#), [email item](#), and [image item](#).

item ID

The local database reference to the content of an [item](#). An item ID value is used in custom [item types](#) to pass items to PL/SQL procedures. The function uses the item ID to access the content of the item.

item level security

See [ILS](#).

item metadata

The stored information or [attributes](#) of an [item](#).

item placeholder item

A type of [item](#) that a user can add to a [page](#). An item placeholder identifies where the content from items that use a [Portal Template](#) for items will display in relation to the rest of the template content.

item type

An object that defines the contents of an [item](#) and the [attributes](#) that are stored ([metadata](#)) about an item. Base item types included with OracleAS Portal are categorized as [content item types](#) and [navigation item types](#).

Custom item types are item types created by [page group administrators](#) to extend the functionality provided by base item types and store additional attribute information about items.

item versioning

See [versioning](#).

J2EE

Java 2 Platform, Enterprise Edition. A platform that enables application developers to develop, deploy, and manage multitier, server-centric, enterprise level applications. The J2EE platform offers a multitiered distributed application model, integrated XML-based data interchange, a unified security model, and flexible transaction control. You can build your own J2EE [portlets](#) and expose them through [Web providers](#).

See also [OC4J](#).

J2SE

Java 2 Platform, Standard Edition. A platform that enables application developers to develop, deploy, and manage Java applets and applications on a desktop client platform such as a personal computer or workstation. J2SE not only defines [API](#) standards, but also specifies the deployment of enterprise applications, thus enabling application server administrators to perform the deployment regardless of the vendor of the J2SE server.

See also [OC4J](#).

Java 2 Platform, Enterprise Edition

See [J2EE](#).

Java 2 Platform, Standard Edition

See [J2SE](#).

JavaScript

A scripting language developed by Netscape that enables generation of [portletlets](#) that introduce dynamic behavior in otherwise static [HTML](#). The [Portlet Builder](#) enables you to use JavaScript to create routines that validate entry fields in [forms](#) and [personalization forms](#). You can also create JavaScript event handlers for entry fields and buttons on forms.

Java Specification Request

See [JSR 168](#).

JavaServer Page

See [JSP](#).

JSP

JavaServer Pages. An extension to [servlet](#) functionality that provides a simple programmatic interface to Web pages. JSPs are [HTML](#) pages with special tags and embedded Java code that is executed on the Web or application server. JSPs provide dynamic functionality to HTML pages. They are actually compiled into servlets when first requested and run in the servlet container.

See also [JSP tags](#).

JSR 168

Java Specification Request (JSR) 168. Defines a set of APIs for building standards-based portlets using Java. Portlets built to this specification can be rendered to a portal locally or deployed to a WSRP container for rendering portlets remotely. For more information, see <http://jcp.org/en/jsr/detail?id=168>.

JSP tags

Tags that can be embedded in [JSPs](#) to enclose Java code. These tags use the `<jsp:` syntax and enclose action elements in the JSP with `begin` and `end` tags similar to [XML](#) elements.

keyword

An [attribute](#) used to provide additional information about a [page](#) or [item](#) so that users can easily locate the page or item during a search.

Layout view

A page editing view that enables you to add, arrange, and remove [regions](#) on the [page](#). You can also hide, show, delete, or move content in this view.

Contrast with [Graphical view](#) and [List view](#).

LBR

Load-balancing router. A very fast network device that distributes Web requests to a large number of servers. It provides portal users with a single published address, without their having to send each request to a specific **middle tier** server.

LDAP

Lightweight Directory Access Protocol. A standard for representing and accessing user and group profile information.

level

An object used to provide structure to **mobile pages** and as a way to limit the amount of content displayed on the smaller screens of mobile devices. Users drill down into the levels on a mobile page to view more content.

library

A collection of one or more PL/SQL or Java program units. Libraries can be referenced by several applications simultaneously.

Lightweight Directory Access Protocol

See **LDAP**.

Link mode

An optional **portlet Show mode** that enables portlets to render themselves on mobile devices, such as cellular telephones.

List view

A page editing view that displays a listing of all **page** content and provides options that enable you to perform actions (delete, move, copy, and so on) on multiple **objects**.

Contrast with **Graphical view** and **Layout view**.

list of objects item

A type of navigation **item** that a user can add to a **page** to list objects (for example, pages and **perspectives**) as a drop-down list or as links (with or without associated images).

list of values

See **LOV**.

load-balancing router

See **LBR**.

local provider group

The collection of **providers** that are defined within an instance of OracleAS Portal. Provider groups make it easier to share providers defined or registered within one instance of OracleAS Portal with other OracleAS Portal instances.

See also **provider group**. Contrast with **remote provider group**.

lock

1. A setting automatically applied to a **Portlet Builder portlet** when it is being edited. The setting prevents other users from editing the portlet.
2. In **WebDAV** the action of preventing other users from editing a file. Locking a file in a WebDAV client checks out the corresponding **item** in the portal itself.

login/logout link item

A type of navigation **item** that a user can add to a **page** to enable other users to log in or log out of the portal.

LOV

List of values. A **portlet** created with the **Portlet Builder** that enables developers to add selectable values to entry fields in **forms**. A single list of values can be displayed in different formats, such as combo boxes, radio buttons, or check boxes.

Manage privileges

A privilege level on an **Oracle Instant Portal** page that allows the user to edit, move, or delete a top-level page and all its child pages. A user with Manage privileges on a portal's home page is considered an administrator of that portal. A user with Manage privileges also has all Contribute and View privileges.

manifest

The list of objects in a **transport set** and their dependents, which provides a granular level of control over the import mode.

master-detail form

A **portlet** created with the **Portlet Builder** that displays a master table row and multiple detail rows within a single HTML page. Values in the master row determine which detail rows are displayed for querying, updating, inserting, and deleting.

See also **form**.

master item ID

An identifier for an **item** that is the same for all versions of that item.

menu

A **portlet** created with **Portlet Builder** that displays a Web page containing options that end users can click to navigate to other menus, other Portlet Builder portlets, or **URLs**.

metadata

Data that describes data. For example **item attributes** store item metadata, such as display name, description, and author.

middle tier

Part of the Oracle Application Server architecture that handles **HTTP** user requests by forwarding them to the appropriate portal database or **provider**, assembles portal **pages**, and manages **caching** of portal content.

MIME type

Multipurpose Internet Mail Extension type. A message format used on the Internet to describe the contents of a message. MIME is used by **HTTP** servers to describe the type of content being delivered.

mobile page

A type of **page** that enables **page designers** to produce pages specifically for mobile devices, for example, cellular phones.

Mobile Preview mode

A preview mode that enables you to preview how your page will look on a mobile device.

mobile XML

See [Oracle Application Server Wireless XML](#).

Model-View-Controller

See [MVC](#).

mod_oc4j

The [Oracle HTTP Server](#) module that manages the communication between the Oracle HTTP Server and [OC4J](#).

mod_plsql

The [Oracle HTTP Server](#) module that handles the database connections made from the Oracle HTTP Server. It enables PL/SQL database procedures to generate [HTTP](#) responses containing formatted data and [HTML](#) code that can display in a Web browser.

MVC

A classic design pattern often used by applications that need the ability to maintain multiple views of the same data. The MVC pattern hinges on a clean separation of objects into one of three categories: models for maintaining data, views for displaying all or a portion of the data, and controllers for handling events that affect the model or views. Because of this separation, multiple views and controllers can interface with the same model. Even new types of views and controllers that never existed before, such as portlets, can interface with a model without forcing a change in the model design.

navigation area

In [Oracle Instant Portal](#), the area along the left side of the page in which the search box and a list of the page's child pages appear.

navigation item type

A means of providing navigation and access to portal-specific functions.

Built-in navigation item types include:

- [smart link item](#)
- [smart text item](#)
- [login/logout link item](#)
- [basic search box item](#)
- [list of objects item](#)
- [object map link item](#)
- [page path item](#)
- [page function item](#)

See also [item type](#). Contrast with [content item type](#).

navigation page

A special purpose [page](#) within a [page group](#) that is typically embedded on other pages or [Portal Templates](#) to implement standard user interface effects such as

navigation bars and banners. Often contains [navigation item types](#) for navigation within the portal.

Navigator

A feature for locating [objects](#) and interacting with OracleAS Portal. Provides access to [objects](#) to which the user has privileges, such as [page groups](#), [providers](#), and database objects.

New Content area

An area on the [Oracle Instant Portal](#) home page in which content added anywhere in the portal over the last 24 hours is gathered.

non-default subscriber

A [subscriber](#) that has a [stripe](#) on a hosted OracleAS Portal provided by an [ASP](#).

object

1. Portal object: A structure such as a [page group](#), [portlet](#), [page](#), or [style](#).
2. Database object: An Oracle database structure such as a [table](#), procedure, or [trigger](#). These objects can be created using OracleAS Portal wizards or Oracle database commands.

object map link item

A type of navigation [item](#) that a user can add to a page to display a map of [objects](#) that are available in the portal.

OC4J

Oracle Application Server Containers for J2EE. The [J2EE](#) server component of [Oracle Application Server](#) written entirely in Java that executes on the standard Java Development Kit (JDK) Virtual machine (Java VM). It includes a [JSP](#) Translator, a Java [servlet](#) container, and an Enterprise JavaBeans (JB) container.

OEM

See [Enterprise Manager](#).

OID

See [Oracle Internet Directory](#).

OmniPortlet

A [Web provider](#) that provides portlets that can display spreadsheet, XML, and Web Service data as tabular, chart, news, bullet, and form layouts.

Oracle Application Server

Oracle's integrated application server:

- Is standards compliant ([J2EE](#), Web Services, and [XML](#))
- Delivers a comprehensive set of capabilities, including portal, [caching](#), wireless, integration, and personalization
- Provides a single, unified platform for Java and J2EE, Web Services, XML, SQL, and PL/SQL

Oracle Application Server Containers for J2EE

See [OC4J](#).

Oracle Application Server Metadata Repository

An Oracle database that contains schemas and business logic used by application server components (including OracleAS Portal) and other pieces of the infrastructure.

OracleAS Portal uses a schema within the Oracle Application Server Metadata Repository to store and manage the content and **metadata** associated with the portal instance. This is sometimes referred to as the **content repository**.

Oracle Application Server Portal

A component of **Oracle Application Server** used for the development, deployment, administration, and configuration of enterprise class **portals**. OracleAS Portal incorporates a portal building framework with self-service publishing features to enable you to create and manage information accessed within your portal.

Oracle Application Server Portal Developer Kit

See **PDK**.

Oracle Application Server Single Sign-On

A component of **Oracle Application Server** that enables users to log in to all features of the Oracle Application Server product suite, as well as to other Web applications, using a single user name and password. OracleAS Portal is integrated with Oracle Application Server Single Sign-On as a **partner application** and delegates authentication to it.

Oracle Application Server Web Cache

A component of **Oracle Application Server** that improves the performance, scalability, and availability of frequently used Web sites. By storing frequently accessed URLs in memory, Oracle Application Server Web Cache eliminates the need to repeatedly process requests for those URLs on the Web server. Oracle Application Server Web Cache uses **invalidation-based caching** and is integrated with OracleAS Portal for improved performance.

See also **portal cache**.

Oracle Application Server Wireless

A component of **Oracle Application Server** used to deliver information and applications to mobile devices. Using Oracle Application Server Wireless, you can create custom portal sites that use different kinds of content, including Web pages, custom Java applications, and **XML**-based applications. Oracle Application Server Wireless sites make this diverse information accessible to mobile devices without your having to rewrite the content for each target device platform.

Oracle Application Server Wireless XML

A device independent markup language used for communication between OracleAS Portal and **Oracle Application Server Wireless**.

OracleAS Portal

See **Oracle Application Server Portal**.

OracleAS Portal Verification Service

(Previously known as Portal Studio). A major component of Portal Center (<http://www.oracle.com/technology/products/ias/portal>) that is specifically tuned to the needs of the portal developer. This site provides developers a way to test and display remote portlets exposed as Web or WSRP providers without having to install their own copy of OracleAS Portal. Developer's portlets reside on

their servers and must be accessible over the Internet. You can access OracleAS Portal Verification Service directly at <http://portalstandards.oracle.com>.

Oracle Enterprise Manager

See [Enterprise Manager](#).

Oracle HTTP Server

The **Web server** component of **Oracle Application Server**, built on Apache Web server technology and used to service **HTTP** requests. It is the part of the **middle tier** that handles requests between the Web and OracleAS Portal. Extensions to the Oracle HTTP Server support Java **servlets**, **JSPs**, Perl, PL/SQL, and CGI applications.

Oracle Instant Portal

A product built on top of OracleAS Portal, designed to provide a common place to share and exchange content for smaller groups of users.

Oracle Instant Portal administrator

A user who has full privileges over the entire portal. Any user with **Manage privileges** on the portal's home page is considered an **Oracle Instant Portal administrator** for that portal. The PORTAL and ORCLADMIN users, created during the installation process, are Oracle Instant Portal administrators for *all* portals. Only an Oracle Instant Portal administrator can change the banner or style, manage users, and create new **top-level pages**.

Oracle Internet Directory

The repository for storing OracleAS Portal user credentials and **group** memberships. By default, the **Oracle Application Server Single Sign-On** authenticates user credentials against Oracle Internet Directory information about dispersed users and network resources. Oracle Internet Directory combines LDAP version 3 with the high performance, scalability, robustness, and availability of the Oracle database.

Oracle JDeveloper

Oracle JDeveloper is an integrated development environment (**IDE**) for building applications and Web services using the latest industry standards for Java, XML, and SQL. Developers can use Oracle JDeveloper to create Java portlets.

Oracle PartnerNetwork Solutions Catalog

(<http://solutions.oracle.com/>) A collection of information on Oracle Partner joint products and services. The Solutions Catalog includes information on partners who offer OracleAS Portal related products and services.

Oracle Technology Network

See [OTN](#).

Oracle Text

A feature of Oracle9i and later that provides advanced search and retrieval services on content stored in an Oracle repository. It is fully integrated into OracleAS Portal to provide users with the ability to perform a full text search and retrieve content managed within the OracleAS Portal schema of the **Oracle Application Server Metadata Repository**. It also provides automatic grouping and classification of results by **gist** and **theme**.

Oracle Ultra Search

An **Oracle Text**-based application that supports crawling, indexing, and federated searching of multiple, heterogeneous repositories including databases, file systems, **Web servers**, and e-mailing list archives.

Contrast with **search portlet**.

OTN

Oracle Technology Network. The online Oracle technical community that provides a variety of technical resources for building Oracle-based applications. You can access OTN at <http://www.oracle.com/technology/>.

Overwrite mode

See **Replace on Import mode**.

package

A database **object** consisting of a PL/SQL specification and a body. The specification includes the data types and subprograms that can be referenced by other program units. The body includes the actual implementation of the package.

page

A portal **object** that contains **portlets** and **items**. Each time you display a page, it is dynamically assembled and formatted according to the portlets and layout chosen for that page.

See also **page type**.

page designer

A user with the Manage privilege on a page (also known as a page manager). A user with this privilege can perform any action on the page and can create sub-pages under the page. The page designer is often responsible for designing the layout (or region configuration) of the page and assigning privileges on the page to other users (for example, to determine who can add content to the page).

The scope of a page designer's control over a page may be limited if the page is based on a template.

page function item

A type of navigation **item** that a user can add to a **page**. A page function is a procedure call that a user can add to a custom **page type**. If there are no page functions associated with the current page, the page function item does not display.

page group

A portal **object** that groups and sets properties of related portal objects, such as **pages**, **styles**, **navigation pages**, and **perspectives**. Page groups typically contain a hierarchy of pages and sub-pages for organizing content.

page group administrator

A user who has full privileges over an entire **page group**. Page group administrators set up and maintain the page group; designate page owners; and create a taxonomy. Page group administrators can also view and manage all the **pages** in the page group.

page group map

A hierarchical representation of all **page groups** in a portal, which enables users to access individual **pages** within the page group. The page group map is tailored for each user; only the pages the user is authorized to view or edit are displayed.

page group quota

See **quota**.

page link item

A type of **item** that a user can add to a **page**. A page link provides a route using a hyperlink to another page within the **portal**. When the user clicks the **display name** link, the page referenced by the item is displayed in the user's browser.

page manager

See **page designer**.

page metadata

Stored information or attributes about a **page**, which is used by OracleAS Portal to set its layout and cache.

page path item

A type of navigation **item** that a user can add to a **page**. A page path is a chain of page reference names. Page paths, often called breadcrumbs, describe the complete directory path.

page toolbar

In page **Edit mode**, the links at the top of the page that enable you to edit various aspects of the **page**, switch editing views (for example, from **Graphical view** to **Layout view**), edit **page group** properties, and so on.

page type

A portal **object** that defines the content of a **page** and the information that is stored about a page. Base page types included with OracleAS Portal are: **standard page**, **mobile page**, **PL/SQL page**, **JSP**, and **URL page**. Custom page types are page types created by **page group administrators** to extend the functionality provided by base page types and store additional information about pages.

Parallel Page Engine

See **PPE**.

parameter

A value passed between **pages** and **portlets**, or between portlets.

A page parameter is a page level parameter (created by a page designer) whose values can be mapped to portlet parameters.

A portlet parameter is declared by a provider. Page designers map page parameters to portlet parameters. When the **PPE** requests a portlet from a provider, only the portlet parameters that the portlet declared and mapped to page parameters are sent.

parameter entry field

A field on a **personalization form** that enables end users to enter values that will be passed to an OracleAS Portal **portlet**.

partial page caching

See [PPC](#).

partner application

An application that has delegated its authentication to [Oracle Application Server Single Sign-On](#). If registered with the OracleAS Single Sign-On, users can log in to multiple [partner applications](#) using a single log in page. In a given session, once users have been authenticated by the OracleAS Single Sign-On, they won't need to log in again to access additional partner applications.

path aliasing

See [path-based URL](#).

path-based URL

A path-based URL identifies the path taken through the [portal](#) to get to a particular [object](#). It is an easy-to-read URL but as it contains the names of portal objects, the URL becomes invalid if the name of any object within the path changes.

For example, the path-based URL to access a top-level [page](#) (`sample_page`) of the [page group](#) `MyPageGroup`:

```
http://mymachine.mycompany.com:5000/portal/page/mydad/MyPageGroup/sample_page
```

Contrast with [durable URL](#).

PDK

OracleAS Portal Developer Kit. The development framework used to build and integrate Web content and applications with OracleAS Portal. It includes toolkits, samples, and technical articles that help make portal development simple. You can take existing Java [servlets](#), [JSPs](#), [URL-accessible content](#) and Web Services and turn them into [portlets](#). It is typically used by external developers and vendors to create portlets and services. The PDK is regularly updated on [Portal Center](#) (<http://portalcenter.oracle.com/>) to provide developers with the latest tools and techniques.

See also [PDK-Java](#), [PDK-PL/SQL](#), and [PDK-URL Services](#).

PDK-Java

A toolkit for implementing [portlets](#) in Java and adding portal features. Used to declaratively turn your existing Java [servlets](#), [JSPs](#), and Web services into portlets.

See also [PDK](#). Contrast with [PDK-PL/SQL](#).

PDK-PL/SQL

A set of articles, samples, and services that enable PL/SQL programmers to easily create portlets and extend them by using PL/SQL [APIs](#).

See also [PDK](#). Contrast with [PDK-Java](#).

PDK-URL Services

A utility for declaratively turning secured and public Web content into [portlets](#). These services are capable of dynamically passing parameters to target [URLs](#), clipping and reformatting content, and providing Oracle Application Server Single Sign-On for applications requiring form-based or basic authentication. These services also allow developers to take any application written in any language and easily create integrated

portlets. PDK-URL Services takes the URL of an application, parses the content, and uses the [PDK-Java](#) framework to create a portlet.

See also [PDK](#).

Pending Approvals Monitor

A portlet that enables you to list pending approvals in the page groups that you administer. You can list the pending approvals by approver, date, page group, or submitter.

Pending Items Preview mode

A preview mode that enables you to view items that are awaiting approval. This mode can be used by content contributors to preview items they have added before they are approved, and by approvers to preview items before they approve or reject them.

See also [Edit mode](#).

personalization form

A page that prompts end users for values to pass to a [Portlet Builder portlet](#). End users can view the personalization form for a portlet, if one has been created, by clicking the portlet's **Personalize** link.

personal page

An area within OracleAS Portal where [authenticated users](#) can store personal content and share it with other users. The [portal administrator](#) can choose to create a personal page for a user when creating a user account.

perspective

A cross-category grouping of [items](#). Perspectives help users answer the question, *Who will be interested in this item?* For example, you can add links to diverse vacation spots around the world and assign perspectives like *Vacations for Nordic Enthusiasts*, *Archeology Expeditions*, and *Extreme Vacations for Adventurers* to items about vacation types. Users publishing content using an item type that includes a perspective attribute may specify none, one, or many values.

Contrast with [category](#).

PL/SQL item

A type of [item](#) that a user can add to a [page](#). A PL/SQL item contains a block of PL/SQL code. When a user clicks the item, the code is executed. The result displays in the user's browser. PL/SQL items can also be displayed directly on the page.

PL/SQL function

See [function](#).

PL/SQL page

A type of [page](#). PL/SQL pages contain PL/SQL code that generates [HTML](#) when the page is rendered.

plug-in

See [extension](#).

poll

A set of questions used to find out information from users.

Contrast with [survey](#) and [test](#).

portal

A common interface (that is, a Web page) that provides a personalized, single point of interaction with Web-based applications and information relevant to individual users or class of users. Portals built using OracleAS Portal are made up of **pages** managed within **page groups**, containing **portlet**s and **item**s.

portal administrator

A user with the highest level of privileges in OracleAS Portal. Portal administrators can view and modify anything in OracleAS Portal, even **pages** and **database providers** marked private. (The only exception is **groups**: although portal administrators can modify the PORTAL_ADMINISTRATORS and PORTAL_PUBLISHERS groups, they cannot modify any other group unless they have been named **group owner**.)

Portal Builder page

A predefined **page** that contains development and administrative **portlet**s used to build and manage portal **object**s and services.

portal cache

A mechanism for storing cache entries for objects that use **validation-based caching**. It also acts as a backup to the memory-based **Oracle Application Server Web Cache** when objects use both validation-based caching and **invalidation-based caching**.

Portal Catalog

See **Oracle PartnerNetwork Solutions Catalog**.

Portal Center

(<http://portalcenter.oracle.com/>) A Web site where you can find out everything you want to know about OracleAS Portal. Updated frequently, it always has the latest product information, and is home to the **Portal Developer Services** and **OracleAS Portal Verification Service**. This Web site contains all information about the product (including documentation, demonstrations, and so on), and provides access to OracleAS Portal expertise.

Portal Community

A network of people dedicated to creating and exchanging information about OracleAS Portal. This community includes anyone who uses OracleAS Portal; it can leverage the **Portal Knowledge Exchange** for sharing Portal-related information and take advantage of the **Portal Developer Services**.

Portal DB provider

See **database provider**.

Portal Developer Kit

See **PDK**.

Portal Developer Services

The network of people dedicated to creating and exchanging OracleAS Portal expertise. This program provides online testing tools through **Portal Center** (<http://portalcenter.oracle.com/>), as well as other venues, and interaction with the product team and other portal developers, using newsletters, surveys, and the **Portal Knowledge Exchange**.

See also **Portal Community**.

Portal Knowledge Exchange

A self-service Web site where subscribers to the [Portal Developer Services](#) can share white papers, techniques, and portlets with others in the [Portal Community](#). Contributions can also be rated so that the most valuable contributions can be easily located.

portal page

See [page](#).

portal repository

See [Oracle Application Server Metadata Repository](#).

Portal Services

A set of services running in the OracleAS Portal OC4J instance that are used to assemble portal pages and to access portal and page metadata. The Parallel Page Engine (PPE) is one of the Portal Services that assembles portal pages. Other services, like those previously provided by `mod_plsql`, are incorporated into the Portal Services as well.

portal session

A period of interaction between a browser and OracleAS Portal, from the initial access to log off, closure of the browser window, or expiration of the session after a period of inactivity.

Portal smart link item

See [smart link item](#).

Portal smart text item

See [smart text item](#).

Portal Studio

See [OracleAS Portal Verification Service](#).

Portal Template

A portal [object](#) built declaratively using a wizard that enforces specific layouts, colors, fonts, and backgrounds for [pages](#) and [items](#). You can use Portal Templates with [navigation pages](#), [standard pages](#), and pages based on custom page types that are based on the standard page type. You can also use Portal Templates with [text items](#), [PL/SQL items](#), [URL items](#), and all [file items](#) with a [MIME type](#) of `text/html` or `text/plain`.

Contrast with [HTML Template](#).

portlet

A reusable, pluggable Web component that typically displays portions of Web content. Portlets are the fundamental building blocks of a portal [page](#). Using the [Portlet Builder](#), you can easily create your own portlets. OracleAS Portal also provides several ways to build portlets programmatically and to integrate any kind of Web content. Portlets may be implemented using various technologies, such as Java, [JSPs](#), Java [servlets](#), PL/SQL, Perl, ASP, and so on. The [PDK](#) covers the standard-based portlet development options that OracleAS Portal provides.

Portlet Builder

A collection of portlet-building wizards that are accessible through the Provider tab in the Portal Navigator. You can use these wizards to build [charts](#), [forms](#), [reports](#), [calendars](#), and lists of values.

portlet instance

A [portlet](#) placed on a particular [page](#).

portlet provider

See [provider](#).

portlet publisher

A user who can publish portal [objects](#) ([pages](#) or otherwise) as [portlets](#) so that they can be included on pages.

portlet record

A programmatic structure that contains detailed information about a [portlet](#), such as its implementation style and [Show mode](#) (PL/SQL).

Portlet Repository

A special [page group](#) that contains the [portlets](#) available from the local [providers](#) and any registered remote providers. When you register a provider, the provider and its portlets are added to the Portlet Repository.

PPC

Partial Page Caching. A feature that enables [Oracle Application Server Web Cache](#) to independently cache and manage fragments of HTML documents. A template page is configured with Edge Side Includes ([ESI](#)) markup tags that tell Oracle Application Server Web Cache to fetch and include the HTML fragments. The fragments themselves are HTML files containing discrete text or other objects.

PPE

Parallel Page Engine. A multi-threaded [servlet](#) engine that runs in the [OC4J](#) container and services [page](#) requests. The PPE reads [page metadata](#), calls [providers](#) for [portlet](#) content, accepts provider responses, and assembles the requested page in the specified page layout. The Parallel Page Engine is part of the Portal Services, which run on the Oracle Application Server [middle tier](#).

pretty URL

See [path-based URL](#).

Preview mode

An optional [portlet Show mode](#) that provides users with a preview of the portlet before they add it to a page.

primary key

One or more columns in a database table that, in combination, uniquely identify a row in a table.

privilege

In OracleAS Portal, the right to perform an action. Privileges are either global (set through in the User or Group Profile) or specific to particular [objects](#) (usually set

through the object's Access tab). When building applications, access can also be granted to database objects, shared portlets, portlets, and applications.

producer

See [provider](#).

profile

The information stored about an OracleAS Portal user or group, such as password, user ID, and [privileges](#).

property sheet

A built-in [attribute](#) that displays a summary of an [item](#)'s attributes or a [page](#)'s properties.

provider

The communication link between OracleAS Portal and a [portlet](#). There are two types of providers: [Web providers](#) and [database providers](#). Web providers may reside anywhere on the network and are addressed through [SOAP](#). Web providers may be implemented using any Web technology. You can build your own Web providers by using the [PDK-Java](#) and the [PDK-URL Services](#). Database providers reside within an Oracle database and manage portlets while performing data-intensive operations.

Providers act as containers for portlets; each portlet communicates with OracleAS Portal through its provider. Providers also manage the portlets they contain.

provider definition

A declarative, [XML](#)-based configuration file (`provider.xml`) that describes a [Web provider](#), its [portlet](#)s, and the location of the content to be displayed in the portlets. This configuration file also describes the behavior of the provider and its portlets.

provider group

A logical collection of [Web providers](#) defined by a provider group service. A [portal administrator](#) can register provider groups for use with their portal. Once registered, a provider group simplifies the process of registering individual [providers](#) in the group. This enables organizations that create Web providers to publish registration details of their providers and facilitate automatic registration with any OracleAS Portal instance. The only information that must be given to the portal administrator is the name and location of the provider group.

See also [local provider group](#) and [remote provider group](#).

provider record

The record returned by a [database provider](#) containing specified information about a [portlet](#).

proxy server

A proxy server typically sits on a network [firewall](#) and enables clients behind the firewall to access Web resources. All requests from clients go to the proxy server rather than directly to the destination server. The proxy server forwards the request to the destination server and passes the received information back to the client. The proxy server channels all Web traffic at a site through a single, secure port; this enables an organization to create a secure firewall by preventing Internet access to internal machines, while allowing Web access.

ptlconfig

The Portal Dependency Settings Tool, used to update the OracleAS Portal schema in the Oracle Application Server Metadata Repository with settings specified in the [iasconfig.xml](#) file.

public page

Any [page](#) in a [page group](#) that is viewable by [public users](#) (users who are not logged onto OracleAS Portal). The page designer or [page group administrator](#) must explicitly designate a page as public.

public user

A user who can access, but is not logged onto, OracleAS Portal. When users first access OracleAS Portal, they do so as public users, whether or not they have the ability to log on. A public user can view any [page](#) that has been marked as public, but cannot personalize or edit any content, or view pages that have any form of access control.

Contrast with [authenticated user](#).

purge

See [system purge](#).

query

A SQL SELECT statement that specifies which data to retrieve from one or more tables or views in a database.

quota

The amount of space provided in a page group or in the OracleAS Portal schema of the [Oracle Application Server Metadata Repository](#) to store uploaded documents.

recent object

A portal [object](#), such as a [page](#) or [portlet](#), that has recently been displayed or edited. Each [authenticated user](#) has his or her own Recent Objects portlet that provides links to the last *n* objects accessed.

referenced object

An object which is directly or indirectly referenced by an [explicit object](#).

See also [manifest](#).

reference path

The path that uniquely identifies a [portlet instance](#) on a [page](#). A reference path can be used to target [parameters](#) to individual portlets on a given page.

region

A carved-out area on a [standard page](#) used to define the page layout, define page content ([portlet](#)s and [item](#)s), and control the [style](#) and [attribute](#)s for content displayed in a region. A standard page can have one or multiple regions. Regions can be created above, beneath, or beside other regions.

You can create the following types of regions:

- Undefined regions are regions that have not been assigned a particular type.
- Item regions allow you to add items such as text, images, files, and so forth.

-
- Portlet regions allow you to include portlets in a region.
 - Sub-Page Links regions allow you to display a list of the current page's sub-pages in a region.
 - Tab regions allow you to include **tabs** in a region.

region banner

A colored, horizontal bar with a title displayed in a **region** of a portal **page**. A banner breaks up the visual flow of a page and groups related **items** that appear beneath it.

remote database

A database running on a separate machine that can be accessed over the network through a connect string or database link.

remote provider group

The collection of **providers** that are defined outside of your local instance of OracleAS Portal.

See **provider group**. Contrast with **local provider group**.

Replace on Import mode

An import mode. When this option is selected, if the object exists on the target, then it is replaced. If the object does not exist then it is created. When this option is not selected, if the object exists on the target, it is referenced. If it does not exist on the target, it is created.

report

A **portlet** created with the **Portlet Builder** that displays the results of a SQL **query** in a tabular format.

Reuse mode

See **Replace on Import mode**.

rich text editor

A WYSIWIG editor that enables **content contributors** to easily apply formatting to **text items**.

rich text item

One of the available items in **Oracle Instant Portal**, designed for smaller blocks of text. A rich text item appears on the page as a title, a summary, and the full text of the item. Compare to **expandable rich text item**, in which the text is hidden until the user clicks an icon. Both expandable rich text and rich text items may contain images, hyperlinks, and tables, as well as any valid HTML code.

root page

The top level of the **page** hierarchy in a **page group**; it contains all other sub-pages in the page group. Also known as the page group's **home page**.

routing method

A mechanism for organizing an **approval process**. OracleAS Portal provides three approval routing methods:

- All, Parallel enables OracleAS Portal to send the approval to recipients in the step all at the same time. All of the recipients must respond to the approval before the item approval can move to the next step.

-
- All, Serial enables OracleAS Portal to send the approval to recipients in the step one at a time in the sequence specified. All of the recipients must respond to the approval before the item approval can move to the next step.
 - Any, Parallel enables OracleAS Portal to send the approval to recipients in the step all at the same time. However, only one of the recipients must respond to the approval before the item approval can move to the next step.

row

A set of values in a table; for example, the values representing one employee in the SCOTT.EMP table.

saved search

A mechanism for saving search criteria under a single name. This feature enables you to repeat the search quickly, by choosing the saved search name rather than re-entering the criteria manually. You can save the results of a [basic search](#), [advanced search](#), or [custom search](#). The Saved Searches portlet lists all the saved searches in a page group.

schema

A collection of [database objects](#), including logical structures such as [tables](#), [views](#), [sequences](#), [stored procedures](#), [synonyms](#), [indexes](#), [clusters](#), and database links. A schema has the name of the user who controls it.

search portlet

A portlet that enables users to search for [pages](#) and content within the OracleAS Portal schema of the [Oracle Application Server Metadata Repository](#). Users can also search based on text strings, categories, perspectives, and attributes, and using operators such as CONTAINS, GREATER THAN, LESS THAN, and EQUAL TO.

Contrast with [Oracle Ultra Search](#).

self registration

A mechanism that allows users to create new accounts for themselves through a link in the Login portlet.

sequence

A database [object](#) used to automatically generate numbers for table rows.

servlet

A Java program that usually runs on a [Web server](#), extending the Web server's functionality. [HTTP](#) servlets take client HTTP requests, generate dynamic content (such as through querying a database), and provide an HTTP response.

session

See [portal session](#).

shared object

A portal [object](#) such as a [personal page](#), [navigation page](#), [style](#), [Portal Template](#), [perspective](#), [category](#), or custom type that can be shared across [page groups](#).

shared portlet

A [portlet](#) created with the [Portlet Builder](#) that is shared between other Portlet Builder portlets. Each shared portlet can be displayed on multiple [pages](#) with the same personalization.

Shared Screen mode

A [portlet Show mode](#) that renders the body of the portlet. Every portlet must have at least a Shared Screen mode.

Show mode

The ways by which a [portlet](#) can be called to display information. These methods include:

- [Shared Screen mode](#)
- [Edit mode](#)
- [Edit Defaults mode](#)
- [Preview mode](#)
- [Help mode](#)
- [About mode](#)
- [Link mode](#)
- [Full Screen mode](#)

simple file item

Similar to a [file item](#) except with fewer [attributes](#), which makes it quicker and easier to create.

simple image item

Similar to an [image item](#) except with fewer [attributes](#), which makes it quicker and easier to create.

Simple Object Access Protocol

See [SOAP](#).

simple page link item

Similar to a [page link item](#) except with fewer [attributes](#), which makes it quicker and easier to create.

simple PL/SQL item

Similar to a [PL/SQL item](#) except with fewer [attributes](#), which makes it quicker and easier to create.

simple text item

Similar to a [text item](#) except with fewer [attributes](#), which makes it quicker and easier to create.

simple URL item

Similar to a [URL item](#) except with fewer [attributes](#), which makes it quicker and easier to create.

Single Sign-On

See [Oracle Application Server Single Sign-On](#).

smart link item

A type of navigation [item](#) that is self-configuring. For example, if you add a Home smart link to a [navigation page](#), when a user clicks the Home link, he or she is automatically taken to his or her [home page](#).

smart text item

A type of navigation [item](#) that is self-configuring. For example, if you add a Current Date smart text item to a [navigation page](#), the current date is automatically pulled from the server and does not need to be specified (through complex coding) by you.

snapshot

A [table](#) that contains the results of a [query](#) on one or more tables, called master tables, in a remote database.

snapshot log

A [table](#) associated with the master table of a [snapshot](#) tracking changes to the master table.

SOAP

Simple Object Access Protocol. A lightweight, [XML](#)-based protocol for exchanging information in a decentralized, distributed environment. SOAP supports different styles of information exchange, including: Remote Procedure Call style (RPC) and Message-oriented exchange. RPC style information exchange allows for request-response processing, where an endpoint receives a procedure-oriented message and replies with a correlated response message. Message-oriented information exchange supports organizations and applications that need to exchange business or other types of documents where a message is sent but the sender may not expect or wait for an immediate response.

SSL accelerator card

A hardware device that handles traffic much faster than regular SSL software.

See also [LBR](#).

SSO

See [Oracle Application Server Single Sign-On](#).

standard page

A type of [page](#) used to contain and manage [items](#) and [portlets](#).

stored procedure

A set of PL/SQL procedures that are stored in a database.

stripe

A secure slice on a [virtual private portal](#) that is assigned to a particular [subscriber](#).

structured UI template

A [shared portlet](#) that controls the look and feel of [Portlet Builder portlets](#) and runs in standalone mode. Structured UI templates display the same image and text in the same location around every portlet that uses the template.

See [user interface \(UI\) template](#). Contrast with [unstructured UI template](#).

struts

A development framework for Java servlet applications based upon the **MVC** design paradigm.

style

A set of values and parameters that controls the colors and fonts of **pages** and **regions**. Style settings include font style, size, color, alignment, and background color. Styles can be created for a specific **page group** or as a **shared object** that is used by pages within multiple page groups.

sub-category

A **category** that appears hierarchically beneath another (parent) category. This provides a way of grouping closely related categories together.

sub-item

An **item** that appears hierarchically beneath another (parent) item. This provides a way of grouping closely related items together, for example, the spreadsheet that is used by a particular HTML file item could be added as a sub-item of the HTML file item.

sub-page

A **page** that appears hierarchically beneath another (parent) page. Every page in a **page group** (except the root page) is a sub-page.

sub-perspective

A **perspective** that appears hierarchically beneath another (parent) perspective. This provides a way of grouping closely related perspectives together.

subscriber

In the context of hosted portals, a subscriber is a company that signs up with an **ASP** and receives a **stripe** on a hosted OracleAS Portal.

subscription notification

A method by which end users can subscribe to a particular **page** or **item** so that they are notified (through the My Notifications portlet) when that page or item is updated. The **page designer** must include a Subscribe **Portal smart link item** for users to be able to subscribe to a page, and must display the Subscribe **attribute** for users to be able to subscribe to items. Additionally, the **page group administrator** must enable approvals and notifications for the **page group**.

substitution tag

A special portal tag used within **HTML Templates** and **unstructured UI templates** to dynamically embed titles, headings, and other elements into the template.

survey

A set of questions used to find out information from users. Surveys can redirect users to different sections of the survey depending on their answers to particular questions.

Contrast with **poll** and **test**.

synonym

An additional name assigned to a **table** or **view** that can thereafter be used to refer to it.

system level caching

A **caching** method where a single copy of an item is stored in the cache (on the middle tier) for all users. Consequently, such items cannot be user specific. All users see the same content for the item.

Contrast with **user level caching**.

system purge

A process that deletes all items in a **page group** from the OracleAS Portal schema of the **Oracle Application Server Metadata Repository** that are marked as deleted or expired. System purges are performed by the **page group administrator** or **portal administrator**.

tab

An area on a **page** used to increase the amount of content that the page can display by effectively doubling (or tripling, quadrupling, and so on) the amount of real estate available. Tabs also allow you to group content that is common to a subject area, organization, specific role, and so forth.

table

The basic storage structure in a relational database.

tablespace

The allocation of space in the database.

template

See **HTML Template**, **Portal Template** or **user interface (UI) template**.

temporary tablespace

The allocation of space in the database used for the creation of temporary table segments for operations such as sorting table rows.

test

A set of questions used to assess a user's understanding of a particular subject or subjects. You can provide the correct answer for questions and assign each question a score. You can also hand score essay-type answers.

Contrast with **poll** and **survey**.

text item

A type of **item** that a user can add to a **page**. When you create a text item, you enter text (up to 32KB) in the Item Wizard. The text block is then stored in the OracleAS Portal schema of the **Oracle Application Server Metadata Repository**.

theme

A snapshot generated by **Oracle Text** that describes a document. Rather than searching for documents that contain specific words or phrases, users can use Oracle Text to search for documents that are about a certain subject, even if that subject is not mentioned explicitly in the document.

title

See **display name**.

top-level page

An [Oracle Instant Portal](#) page represented by a tab in the portal's tab set. May contain one or more [child pages](#). Page privileges applied to a top-level page are also applied to all its child pages.

translation

A [page group](#) rendered in another language. When a [page group administrator](#) creates a translation, [content contributors](#) can add content in that language. Page group users can also view the translated content by setting their language to one of the supported languages.

transport set

A collection of portal [objects](#) for [export](#) or [import](#). It can contain more than one object of a particular type, such as multiple [page groups](#) and multiple [pages](#).

trigger

A database [object](#) associated with a table. It executes before or after one or more specified events.

Ultra Search

See [Oracle Ultra Search](#).

Uniform Resource Locator

See [URL](#).

unstructured UI template

A [shared portlet](#) that is used to insert content and [HTML](#) code to control the look and feel of [Portlet Builder portlets](#). Unstructured UI templates are based on HTML code that, when executed, dynamically embeds titles, headings, and other elements that make up a page.

See also [substitution tag](#) and [user interface \(UI\) template](#). Contrast with [structured UI template](#).

URL

Uniform Resource Locator. A compact string representation of the location for a resource that is available through the Internet. It is also the format Web clients use to encode requests to [Oracle Application Server](#).

URL item

A type of [item](#) that a user can add to a [page](#). A URL item, when clicked, provides a route to another Web page. When a user clicks the URL item's [display name](#), the Web page referenced by the [URL](#) displays.

In [Oracle Instant Portal](#), a URL item is represented on the page by a globe and, optionally, a title and summary. When the user clicks the globe, the location specified in the item opens in a secondary browser window.

URL page

A type of [page](#) that provides a route to another Web page, identified by its [URL](#). When a user clicks the page link, the Web page referenced by the link is displayed.

URL portlet

A **portlet** created with the **Portlet Builder** that displays the contents of a Web page specified by a **URL**.

user interface (UI) template

A **shared portlet** that controls the look and feel of **Portlet Builder portlets** in full page display mode. Selecting a UI template when you are building a portlet automatically selects a title on the page where the portlet is displayed, a title background, links to other Web pages, and background colors and images.

See also **structured UI template** and **unstructured UI template**. Contrast with **HTML Template** and **Portal Template**.

user level caching

A **caching** method where a copy of an item is stored in the cache (on the middle tier) for each user. Consequently, users may see different content for the same item.

Contrast with **system level caching**.

validation-based caching

A **caching** method that uses a validation check to determine if the cached item is still valid. This is the caching method used by the **portal cache**. Before an item in the portal cache is used, the **PPE** contacts the portal repository or the **provider** that the content came from to determine if the cached item is still valid.

Contrast with **expiry-based caching** and **invalidation-based caching**.

versioning

A mechanism that allows multiple versions of an **item** to simultaneously exist in the OracleAS Portal schema of the **Oracle Application Server Metadata Repository**. This feature is useful for tracking document changes from one version to the next or for reverting to a previous version if necessary.

view

A virtual **table** whose rows do not actually exist in the database, but which is based on a table that is physically stored in the database.

View mode

The runtime view of a **page**.

Contrast with **Edit mode**.

View privileges

A privilege level on an **Oracle Instant Portal** page that allows the user to view content on the page. All users may navigate pages, select items for the **Favorite Content area** of the home page, and search for content.

virtual private database

See **VPD**.

virtual private portal

Features for hosting multiple companies or multiple organizations securely within the same portal instance.

VPD

Virtual Private Database. A feature for [ASPs](#) that want to leverage the Oracle database to host their customers. Essentially, it uses one physical database instance for all customers, but to each customer it looks as if they have their own database. Users cannot see any information that is not meant for them and complete customer isolation is achieved. It requires little to no changes in the core application to take effect as most of the work is done at the database level. Implementing VPD basically requires two key steps: adding a context column (for example, company name) to all the database tables, and implementing a policy to restrict queries on each table based on the context of the logged in user. VPD provides highly secure, full subscriber isolation using this method.

WAP

Wireless Application Protocol. A set of open, global protocols for developing applications and services that use wireless networks.

Web Cache

See [Oracle Application Server Web Cache](#).

Web clipping

A feature that enables page designers to collect Web content into a single centralized portal. It can be used to consolidate content from hundreds of different Web sites scattered throughout a large organization.

WebDAV

Web-based Distributed Authoring and Versioning. A protocol extension to [HTTP](#) 1.1 that supports distributed authoring and versioning. With WebDAV, the Internet becomes a transparent read and write medium, where content can be checked out, edited, and checked in to a [URL](#) address.

Web Services for Remote Portlets

See [WSRP](#).

Web provider

An entity that is called, using an [HTTP](#) request, by OracleAS Portal and returns [portlet](#) content in [HTML](#), [XML](#), or [WSRP](#). A Web provider acts as a proxy for one or more portlets that are defined within a particular application environment (for example, Java, ASP, or Perl) and executed as applications external to OracleAS Portal. Web providers are particularly appropriate for Web-accessible information sources.

See also [provider](#). Contrast with [database provider](#).

Web server

A program that delivers Web pages.

Wireless Application Protocol

See [WAP](#).

Wireless Markup Language

See [WML](#).

wireless portal

A [portal](#) accessible from wireless devices, such as cellular telephones.

See also [Oracle Application Server Wireless](#).

wizard

A graphical interface that guides a user step-by-step through a process. In OracleAS Portal, wizards are used for creating [database providers](#), [portlet](#)s, database [objects](#), [pages](#), [page groups](#), and [items](#).

WML

Wireless Markup Language. An [XML](#)-based markup language used to define hypertext-like content and applications for handheld devices.

WSRP

Web Services for Remote Portlets (WSRP). A Web services standard that allows the plug-and-play of visual, user-facing Web services with portals or other intermediary Web applications. Being a standard, WSRP enables interoperability between a standards-enabled container based on a particular language (such as JSR 168, .NET, Perl) and any WSRP portal. So, a portlet (regardless of language) deployed to a WSRP-enabled container can be rendered on any portal that supports this standard.

XML

Extensible Markup Language. An open standard for describing data using a subset of the SGML syntax.

XML portlet

An OracleAS Portal [portlet](#) that displays the executed results of [XML](#) code. To create the portlet, you either specify XML code or a [URL](#) that points to the XML code.

XSL

Extensible Stylesheet Language. The language used within stylesheets to transform or render XML documents.

zip file item

A type of [item](#) that a user can add to a [page](#). Zip file items enable you to upload many files in a single operation. You can use them to migrate the contents of a file system or Web site into the OracleAS Portal schema of the [Oracle Application Server Metadata Repository](#). When you upload a zip file to OracleAS Portal, then unzip the uploaded file, a page is created for each directory and an item is created for each file. The items are published in the target page.

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