

Chapter

4

SECTION I: JAVA SERVLETS AND JAVA SERVER PAGES

Introduction To Java Server Pages

Since modern enterprise applications are moving from two-tier towards three-tier and N-tier architectures, there arises a need of discovering different ways to deliver applications and data to users.

The major drawback with the traditional thick client that holds the entire application on the local computer is that it becomes difficult distributing and updating the application.

Web based clients provide an excellent alternative for building Intranet and Internet enterprise applications. The new **Java Server Pages [JSP]** technology 2.1, part of the Java EE 5, gives web and Java developers a simple yet powerful mechanism for creating such web applications.

The JSP technology:

- ❑ Is a language for developing JSP pages, which are text-based documents that describe how to process a request and construct a response
- ❑ Is an expression language for accessing server-side objects

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- ❑ Allows creating web content with both static and dynamic components
- ❑ Makes available all the dynamic capabilities of Java Servlet technology but provides a more natural approach to creating static content
- ❑ Provides mechanisms for defining extensions to the JSP language
- ❑ Provides developers with the ability to access remote data via mechanisms such as Enterprise Java Beans [EJB], Remote Method Invocation [RMI] and Java DataBase Connectivity [JDBC]
- ❑ Provides developers with the ability to encapsulate and separate program logic from the presentation i.e. the HTML elements, to help maximize code reuse and flexibility. This separation of logic and presentation is a major advantage over the web application architectures such as Java Servlets and CGI scripts

A JSP page is a text document that contains two types of text:

- ❑ **Static data**, which can be expressed in any text-based format such as HTML, SVG, WML and XML
- ❑ **JSP elements**, which construct dynamic content

The recommended file extension for the source file of a JSP page is **.jsp**. The page can be composed of a top file that includes other files that contain either a complete JSP page or a fragment of a JSP page. The recommended extension for the source file of a fragment of a JSP page is **.jspx**.

Why Use Java Server Pages

The benefits of using JSP:

Nobody Can Borrow The Code

When a web site that does something really cool, which attracts the attention of the users, developers look at the source code of the page and copy the JavaScript or other code into their own pages which then do the same cool stuff.

With JSP, this issue does not arise at all. The code written runs and remains on the Web server. All of its functionality is handled before the page is sent to a Browser.

Faster Loading Of Pages

When DHTML, JavaScript or any other client-side technology is used to customize page content, the page developer must send all of the content that a user might want plus the code that is necessary to hide and reveal those sections.

With JSP, decisions can be made about what the user wants to see at the Web server prior the pages being dispatched. Hence, only the content that the user is interested in will be dispatched to the user, with no extra code and extra content.

No Browser Compatibility Issues

Those who craft JavaScript or other scripts know that the code should always be checked thoroughly across several versions of several browsers to make sure it will work as expected. The most common browsers are Netscape, Mozilla Firefox, Internet Explorer and Opera. Making JavaScript work in all these Browsers either things are kept very simple or custom code is created for multiple versions of some of the browsers and delivered appropriately.

JSP has no such issues. The developer ends up sending standard HTML to a user Browser. This largely eliminates scripting issues and cross Browser compatibility.

JSP Support

JSP is supported by a number of Web servers. Built-in support for JSP is available in Java Web Server from Sun.

For Web servers that do not directly support JSP and Java Servlets, add-on support is provided through products such as Live Software's JRun [recently acquired by Allaire]. JRun works with a number of popular Web servers like Apache, Microsoft IIS and PWS, Netscape's FastTrack and Enterprise Web servers and others.

Compilation

Another important benefit is that the JSP is always compiled before the web server processes it. The older technologies such as CGI require the server to load an interpreter and the target script each time the page is requested.

JSP gets around this problem by compiling each JSP page into executable code the first time it is requested and invoking the resulting code directly on all subsequent requests. When coupled with a persistent JVM on a Java enabled web server, this allows the server to handle JSP pages much faster.

JSP Elements In HTML / XML Pages

A JSP page looks a lot like an HTML or XML page. It holds text marked up with an assortment of tags. While a regular JSP page is not a valid XML page, there is a variant JSP tag syntax that lets the developer use JSP tags within XML documents.

