JBoss Enterprise Application Platform 5

RichFaces Developer Guide

for use with JBoss Enterprise Application Platform 5

Edition 5.2.0

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Abstract

A guide to using RichFaces with the JBoss Enterprise Platforms for developers.

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CHAPTER 1. INTRODUCTION

RichFaces is an open source framework that adds AJAX capability into existing JSF applications without resorting to JavaScript.

RichFaces leverages aspects of the JavaServer Faces (JSF) framework, including life cycle, validation, conversion facilities, and management of static and dynamic resources. RichFaces components with built-in AJAX support and a highly customizable look-and-feel can be easily incorporated into JSF applications.

RichFaces allows you to:

- Experience the benefits of JSF while working with AJAX. RichFaces is fully integrated into the JSF life cycle. Where other frameworks only allow access to the managed bean facility, RichFaces lets you access the action and value change listeners, and invokes server-side validators and converters during the AJAX request-response cycle.

- Add AJAX capabilities to existing JSF applications. The RichFaces framework provides two component libraries (Core AJAX and UI). The Core library adds AJAX functionality to existing pages, so you need not write any JavaScript or replace existing components with new AJAX components manually. RichFaces enables page-wide rather than component-wide AJAX support, giving you the opportunity to define events on the page.

- Quickly and easily create different views with a variety of components, available out-of-the-box. The RichFaces UI library contains components for adding rich user interface (UI) features to JSF applications, providing you with a broad variety of AJAX-enabled components with extensive skins support. RichFaces components are designed to integrate seamlessly with other third-party component libraries, so you have more options when you develop applications.

- Write your own rich components with built-in AJAX support. The Component Development Kit (CDK) is constantly being expanded. It includes both code generation and templating facilities and a simple JSP-like (JavaServer Pages) syntax, letting you create first-class rich components with built-in AJAX functionality.

- Package resources with application Java classes. RichFaces provides advanced support for managing different resource types, including images, JavaScript code, and CSS stylesheets. The resource framework makes it easier to include these resources in JAR files with your custom component code.

- Quickly and easily generate binary resources. The resource framework can generate images, sounds, Excel spreadsheets, etc. in real time, so you can, for example, create images with the Java Graphics 2D library and other similar resources.

- Customize the look and feel of your user interface with skins-based technology. RichFaces lets you easily define and manage different color schemes and other user interface parameters by using named *skin parameters*. This means you can access UI parameters from JSP and Java code to adjust your UI in real time. RichFaces includes a number of predefined skins to kick-start your application's development, but it is easy to create your own custom skins.

- Simultaneously create and test your components, actions, listeners, and pages. RichFaces will soon include an automated testing facility to generate test cases for your component as you develop it. The testing framework tests not only the components, but also any other server-side or client-side functionality, including JavaScript code — and it will do so *without* deploying the test application into the Servlet container.

RichFaces UI components can be implemented immediately, right out of the box. This saves development time and gives you immediate access to RichFaces web application development features, so experience with RichFaces is fast and easy to obtain.

CHAPTER 2. GETTING STARTED WITH RICHFACES

This chapter tells you how to plug RichFaces components into a JSF application. The instructions are based on a simple *JSF with RichFaces* creation process, from downloading the required libraries to running the application in a browser. These instructions do not depend on the integrated development environment that is in use.

2.1. SIMPLE JSF APPLICATION WITH RICHFACES

RichFaces Greeter — the simple application — is similar to a typical *hello world* application, with one exception: the world of RichFaces will say "Hello!" to the user first.

Create a standard JSF 1.2 project named **`Greeter`**. Include all required libraries, and continue with the instructions that follow.

2.1.1. Adding RichFaces libraries into the project

From the **`RichFaces`** folder where you unzipped the RichFaces binary files, open the **`lib`**. This folder contains three **`*.jar`** files with API, UI, and implementation libraries. Copy these JARs from **`lib`** to the **`WEB-INF/lib`** directory of your **Greeter** JSF application.

IMPORTANT

A JSF application with RichFaces assumes that the following JARs are available in the project:

- **`commons-beanutils-1.7.0.jar`**
- **`commons-collections-3.2.jar`**
- **`commons-digester-1.8.jar`**
- **`commons-logging-1.0.4.jar`**
- **`jhighlight-1.0.jar`**

2.1.2. Registering RichFaces in `web.xml`

After you add the RichFaces libraries to the project, you must register them in the project **`web.xml`** file. Add the following to **`web.xml`**:

```
...
<!-- Plugging the "Blue Sky" skin into the project -->
<context-param>
   <param-name>org.richfaces.SKIN</param-name>
   <param-value>blueSky</param-value>
</context-param>

<!-- Making the RichFaces skin spread to standard HTML controls -->
<context-param>
      <param-name>org.richfaces.CONTROL_SKINNING</param-name>
      <param-value>enable</param-value>
</context-param>
```

```
<!-- Defining and mapping the RichFaces filter -->
<filter>
   <display-name>RichFaces Filter</display-name>
   <filter-name>richfaces</filter-name>
   <filter-class>org.ajax4jsf.Filter</filter-class>
</filter>

<filter-mapping>
   <filter-name>richfaces</filter-name>
   <servlet-name>Faces Servlet</servlet-name>
   <dispatcher>REQUEST</dispatcher>
   <dispatcher>FORWARD</dispatcher>
   <dispatcher>INCLUDE</dispatcher>
</filter-mapping>
...
```

For more information about RichFaces skins, read Section 4.4, “Skinnability”.

Finally, your **web.xml** should look like this:

```
<?xml version="1.0"?>
<web-app version="2.5"
                xmlns="http://java.sun.com/xml/ns/javaee"
                xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd">
<display-name>Greeter</display-name>

<context-param>
   <param-name>javax.faces.STATE_SAVING_METHOD</param-name>
   <param-value>server</param-value>
</context-param>

<context-param>
   <param-name>org.richfaces.SKIN</param-name>
   <param-value>blueSky</param-value>
</context-param>

<context-param>
      <param-name>org.richfaces.CONTROL_SKINNING</param-name>
      <param-value>enable</param-value>
</context-param>

<filter>
   <display-name>RichFaces Filter</display-name>
   <filter-name>richfaces</filter-name>
   <filter-class>org.ajax4jsf.Filter</filter-class>
</filter>

<filter-mapping>
   <filter-name>richfaces</filter-name>
   <servlet-name>Faces Servlet</servlet-name>
   <dispatcher>REQUEST</dispatcher>
   <dispatcher>FORWARD</dispatcher>
   <dispatcher>INCLUDE</dispatcher>
```

```
</filter-mapping>

<listener>
   <listener-class>com.sun.faces.config.ConfigureListener</listener-class>
</listener>

<!-- Faces Servlet -->
<servlet>
   <servlet-name>Faces Servlet</servlet-name>
   <servlet-class>javax.faces.webapp.FacesServlet</servlet-class>
   <load-on-startup>1</load-on-startup>
</servlet>

<!-- Faces Servlet Mapping -->
<servlet-mapping>
   <servlet-name>Faces Servlet</servlet-name>
   <url-pattern>*.jsf</url-pattern>
</servlet-mapping>

<login-config>
   <auth-method>BASIC</auth-method>
   </login-config>
</web-app>
```

2.1.3. Managed bean

The **RichFaces Greeter** application needs a managed bean. In the project's **JavaSource** directory, create a new managed bean named **user** in the **demo** package. Place the following code in **user**:

```
package demo;

public class user {
   private String name="";
   public String getName() {
      return name;
   }
   public void setName(String name) {
      this.name = name;
   }
}
```

2.1.4. Registering the bean in `faces-config.xml`

To register the **user** bean, add the following to the **faces-config.xml** file:

```
<?xml version="1.0" encoding="UTF-8"?>
<faces-config version="1.2"
                    xmlns="http://java.sun.com/xml/ns/javaee"
                    xmlns:xi="http://www.w3.org/2001/XInclude"
                    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                    xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-facesconfig_1_2.xsd">
   <managed-bean>
      <description>UsernName Bean</description>
```

```
      <managed-bean-name>user</managed-bean-name>
      <managed-bean-class>demo.user</managed-bean-class>
      <managed-bean-scope>request</managed-bean-scope>
      <managed-property>
         <property-name>name</property-name>
         <property-class>java.lang.String</property-class>
         <value/>
      </managed-property>
   </managed-bean>
</faces-config>
```

2.1.5. RichFaces Greeter index.jsp

RichFaces Greeter has only one JSP page. Create **`index.jsp`** in the root of **`WEB CONTENT`** folder and add the following to the JSP file:

```
<!doctype html public "-//w3c//dtd html 4.0 transitional//en">
<%@ taglib uri="http://java.sun.com/jsf/core" prefix="f" %>
<%@ taglib uri="http://java.sun.com/jsf/html" prefix="h" %>
<!-- RichFaces tag library declaration -->
<%@ taglib uri="http://richfaces.org/a4j" prefix="a4j"%>
<%@ taglib uri="http://richfaces.org/rich" prefix="rich"%>

<html>
      <head>
            <title>RichFaces Greeter</title>
      </head>
      <body>
            <f:view>
                  <a4j:form>
                        <rich:panel header="RichFaces Greeter"
style="width: 315px">
                              <h:outputText value="Your name: " />
                              <h:inputText value="#{user.name}" >
                                    <f:validateLength minimum="1"
maximum="30" />
                              </h:inputText>

                              <a4j:commandButton value="Get greeting"
reRender="greeting" />

                              <h:panelGroup id="greeting" >
                                    <h:outputText value="Hello, "
rendered="#{not empty user.name}" />
                                    <h:outputText value="#{user.name}"
/>
                                    <h:outputText value="!" rendered="#
{not empty user.name}" />
                              </h:panelGroup>
                        </rich:panel>
                  </a4j:form>
            </f:view>
      </body>
</html>
```

The application uses three RichFaces components: **<rich:panel>** is used as visual container for information; **<a4j:commandButton>** with built-in AJAX support lets a greeting be rendered dynamically after a response returns; and **<a4j:form>** helps the button to perform the action.

NOTE

The RichFaces tag library should be declared on each JSP page. For XHTML pages, add the following lines to declare your tag libraries:

```
<xmlns:a4j="http://richfaces.org/a4j">
<xmlns:rich="http://richfaces.org/rich">
```

Now, run the application on the server by pointing your browser to the **index.jsp** page: **http://localhost:8080/Greeter/index.jsf**

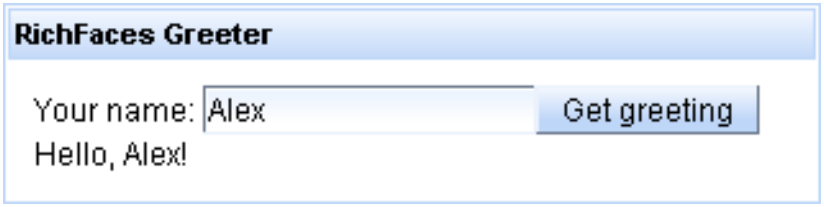


Figure 2.1. "RichFaces Greeter" application

2.2. RELEVANT RESOURCES LINKS

JBoss Developer Studio includes tight integration with the RichFaces component framework.

CHAPTER 3. SETTINGS FOR DIFFERENT ENVIRONMENTS

RichFaces includes support for all tags (components) included in the JavaServer Faces (JSF) specification. To add RichFaces capabilities to an existing JSF project, place the RichFaces libraries into the `lib` directory of the project, and add filter mapping. The behavior of the existing project does not change when you add RichFaces.

3.1. WEB APPLICATION DESCRIPTOR PARAMETERS

RichFaces does not require that any parameters be defined in your `web.xml`, but the RichFaces parameters listed below will help you during the development process and increase the flexibility of your RichFaces applications.

Table 3.1. Initialization Parameters

Name	Default	Description
org.richfaces.SKIN	DEFAULT	The name of a skin that is used in an application. Can be a literal string with a skin name or the EL expression (`#{...}`) associated with a String property (skin name) of a property of a `org.richfaces.framework.skin` type. In the latter case, that instance is used as the current skin.
org.richfaces.LoadScriptStrategy	DEFAULT	Defines how the RichFaces script files are loaded to the application. Possible values are **ALL**, **DEFAULT** and **NONE**.
org.richfaces.LoadStyleStrategy	DEFAULT	Defines how the RichFaces style files are loaded into the application. Possible values are: **ALL**, **DEFAULT**, or **NONE**.
org.ajax4jsf.LOGFILE	none	The URL of an application or a container log file (if applicable). If this parameter is set, content from the given URL is shown on a Debug page in the `iframe` window.

Name	Default	Description
org.ajax4jsf.VIEW_HANDLERS	none	A comma-separated list of **`ViewHandler`** instances for inserting in a view handler chain. These handlers are inserted before the RichFaces viewhandlers, in the order they are listed. In a Facelets application, you would declare **`com.sun.facelets.FaceletViewHandler`** here instead of in the **`faces-config.xml`** file.
org.ajax4jsf.CONTROL_COMPONENTS	none	A comma-separated list of special *control case* components, such as the messages bundle loader or an alias bean component. These handlers are provided via a reflection from the static field **`COMPONENT_TYPE`**. Encoding methods for these components are always called while rendering AJAX responses, even if a component has not been updated.
org.ajax4jsf.ENCRYPT_RESOURCE_DATA	false	For generated resources (such as encrypt generation data), this is encoded in the resource URL. For example, the URL of an image generated by the **`mediaOutput`** component contains the name of a generation method. Since malicious code can exploit this to create a request for any JSF bean or attribute, this parameter should be set to **`true`** in critical applications. (This fix works with Java Runtime Environment 1.4.)
org.ajax4jsf.ENCRYPT_PASSWORD	random	A password used to encrypt resource data. If this is not set, a random password is used.
org.ajax4jsf.COMPRESS_SCRIPT	true	When defined, does not allow the frameword to reformat JavaScript files. This means that the debug feature cannot be used.

Name	Default	Description
org.ajax4jsf.RESOURCE_URI_PREFIX	a4j	Defines the prefix to be added to the URLs of all generated resources. This is designed to handle RichFaces generated resource requests.
org.ajax4jsf.GLOBAL_RESOURCE_URI_PREFIX	a4j/g	Defines the prefix to be added to the URI of all global resources. This prefix is designed to handle RichFaces generated resource requests.
org.ajax4jsf.SESSION_RESOURCE_URI_PREFIX	a4j/s	Defines the prefix to be used to track the sessions of generated resources. This prefix is designed to handle RichFaces generated resource requests.
org.ajax4jsf.DEFAULT_EXPIRE	86400	Defines the period (in seconds) for which resources are cached when they are streamed back to the browser.
org.ajax4jsf.SERIALIZE_SERVER_STATE	false	If set to **`true`**, the component state (not the tree) will be serialized before it is stored in the session. This can be useful in applications with view state that is sensitive to model changes. Alternatively, use **`com.sun.faces.serializeServerState`** and **`org.apache.myfaces.SERIALIZE_STATE_IN_SESSION`** parameters in their respective environments.

NOTE

`org.richfaces.SKIN` is used in the same way as **`org.ajax4jsf.SKIN`**.

Table 3.2. org.ajax4jsf.Filter Initialization Parameters

Name	Default	Description

Name	Default	Description
log4j-init-file	-	A path (relative to the web application's context) to the **`log4j.xml`** configuration file. This can be used to set up per-application custom logging.
enable-cache	true	Enables caching of framework-generated resources (JavaScript, CSS, images, etc.). However, your cached resources will not be used when attempting to debug custom JavaScript or Styles.
forcenotrf	true	Forces all JSF pages to be parsed by a HTML syntax check filter. If set to **`false`**, only AJAX responses will be parsed and converted to well-formed XML. Setting this to **`false`** can improve performance, but may also cause unexpected information to be rendered during AJAX updates.

3.2. SUN JSF RI

RichFaces works with JavaServer Faces 1.2_13 without needing to modify additional settings.

3.3. FACELETS SUPPORT

RichFaces has high-level support for Facelets, regardless of the version used. However, some JSF frameworks (including Faces) require that their own **`ViewHandler`** be listed first in the **`ViewHandler`** chain. RichFaces also requires that its **`AjaxViewHandler`** be listed first, but because it is installed first, no settings will need to be altered. Where multiple frameworks are used without RichFaces, you can use the **`VIEW_HANDLERS`** parameter to define the order in which the **`ViewHandlers`** are used. For example:

```
...
<context-param>
     <param-name>org.ajax4jsf.VIEW_HANDLERS</param-name>
     <param-value>com.sun.facelets.FaceletViewHandler</param-value>
</context-param>
...
```

This declares that while **`Facelets`** will officially be first, **`AjaxViewHandler`** will briefly be ahead of it to perform some small, important task.

NOTE

In this case, you need not define **FaceletViewHandler** in **WEB-INF/faces-config.xml**.

3.4. JBOSS SEAM SUPPORT

RichFaces is compatible with **JBoss Seam** and Facelets when run within JBoss Enterprise Application Server. No additional JARs are required. All you need to do is package the RichFaces library with your application.

For **Seam 1.2**, your **web.xml** must be as follows:

```
<?xml version="1.0" ?>
<web-app xmlns="http://java.sun.com/xml/ns/j2ee"
                  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                  xsi:schemaLocation="http://java.sun.com/xml/ns/j2ee
http://java.sun.com/xml/ns/j2ee/web-app_2_4.xsd"
                  version="2.4">

     <!-- richfaces -->

     <filter>
          <display-name>RichFaces Filter</display-name>
          <filter-name>richfaces</filter-name>
          <filter-class>org.ajax4jsf.Filter</filter-class>
     </filter>

     <filter-mapping>
          <filter-name>richfaces</filter-name>
          <url-pattern>*.seam</url-pattern>
     </filter-mapping>

     <!-- Seam -->

     <listener>
          <listener-class>org.jboss.seam.servlet.SeamListener</listener-
class>
     </listener>

     <servlet>
          <servlet-name>Seam Resource Servlet</servlet-name>
          <servlet-class>org.jboss.seam.servlet.ResourceServlet</servlet-
class>
     </servlet>

     <servlet-mapping>
          <servlet-name>Seam Resource Servlet</servlet-name>
          <url-pattern>/seam/resource/*</url-pattern>
     </servlet-mapping>

     <filter>
          <filter-name>Seam Filter</filter-name>
          <filter-class>org.jboss.seam.web.SeamFilter</filter-class>
     </filter>
```

```
     <filter-mapping>
          <filter-name>Seam Filter</filter-name>
          <url-pattern>/*</url-pattern>
     </filter-mapping>

     <!-- MyFaces -->

     <listener>
          <listener-
class>org.apache.myfaces.webapp.StartupServletContextListener</listener-
class>
     </listener>

     <!-- JSF -->

     <context-param>
          <param-name>javax.faces.STATE_SAVING_METHOD</param-name>
          <param-value>client</param-value>
     </context-param>

     <context-param>
          <param-name>javax.faces.DEFAULT_SUFFIX</param-name>
         <param-value>.xhtml</param-value>
     </context-param>

     <servlet>
          <servlet-name>Faces Servlet</servlet-name>
          <servlet-class>javax.faces.webapp.FacesServlet</servlet-class>
          <load-on-startup>1</load-on-startup>
     </servlet>

     <servlet-mapping>
          <servlet-name>Faces Servlet</servlet-name>
          <url-pattern>*.seam</url-pattern>
     </servlet-mapping>
</web-app>
```

Seam 2.x supports RichFaces Filter, so your **web.xml** must look like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app version="2.5"
                  xmlns="http://java.sun.com/xml/ns/javaee"
                  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                  xsi:schemaLocation="http://java.sun.com/xml/ns/javaee
http://java.sun.com/xml/ns/javaee/web-app_2_5.xsd">

     <context-param>
          <param-name>org.ajax4jsf.VIEW_HANDLERS</param-name>
          <param-value>com.sun.facelets.FaceletViewHandler</param-value>
     </context-param>

     <!-- Seam -->

     <listener>
          <listener-class>org.jboss.seam.servlet.SeamListener</listener-
```

```
class>
     </listener>

     <servlet>
          <servlet-name>Seam Resource Servlet</servlet-name>
          <servlet-
class>org.jboss.seam.servlet.SeamResourceServlet</servlet-class>
     </servlet>

     <servlet-mapping>
          <servlet-name>Seam Resource Servlet</servlet-name>
          <url-pattern>/seam/resource/*</url-pattern>
     </servlet-mapping>

     <filter>
          <filter-name>Seam Filter</filter-name>
          <filter-class>org.jboss.seam.servlet.SeamFilter</filter-class>
     </filter>

     <filter-mapping>
          <filter-name>Seam Filter</filter-name>
          <url-pattern>/*</url-pattern>
     </filter-mapping>

     <!-- JSF -->

     <context-param>
          <param-name>javax.faces.DEFAULT_SUFFIX</param-name>
          <param-value>.xhtml</param-value>
     </context-param>

     <context-param>
          <param-name>facelets.DEVELOPMENT</param-name>
          <param-value>true</param-value>
     </context-param>

     <servlet>
          <servlet-name>Faces Servlet</servlet-name>
          <servlet-class>javax.faces.webapp.FacesServlet</servlet-class>
          <load-on-startup>1</load-on-startup>
     </servlet>

     <servlet-mapping>
          <servlet-name>Faces Servlet</servlet-name>
          <url-pattern>*.seam</url-pattern>
     </servlet-mapping>
</web-app>
```

CHAPTER 4. BASIC CONCEPTS OF THE RICHFACES FRAMEWORK

4.1. INTRODUCTION

The RichFaces Framework is implemented as a component library that adds AJAX capabilities into existing pages. This means that you do not need to write any JavaScript code or replace existing components with new AJAX widgets. RichFaces enables page-wide AJAX support instead of the traditional component-wide support, so you can define areas of the page that will reflect changes made by AJAX events on the client.

The diagram following shows the process in full:

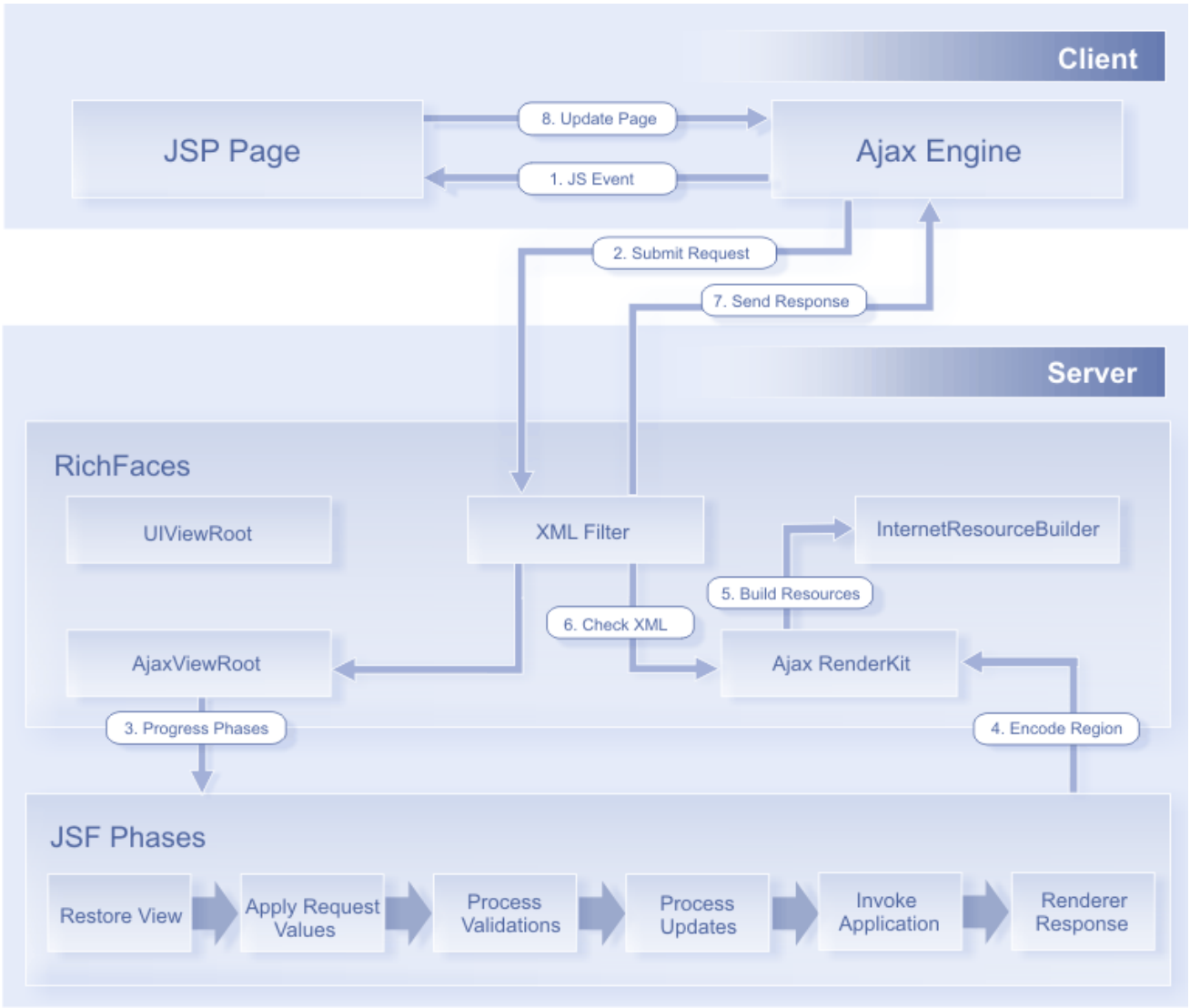


Figure 4.1. Request Processing flow

RichFaces lets you use JSF tags to define sections of a JSF page that you wish to update with the results of an AJAX request. It also provides you with several options for sending AJAX requests to the server. You do not need to write any JavaScript or `XMLHTTPRequest` objects by hand — everything is done automatically.

4.2. RICHFACES ARCHITECTURE OVERVIEW

The following figure lists several important elements of the RichFaces Framework.

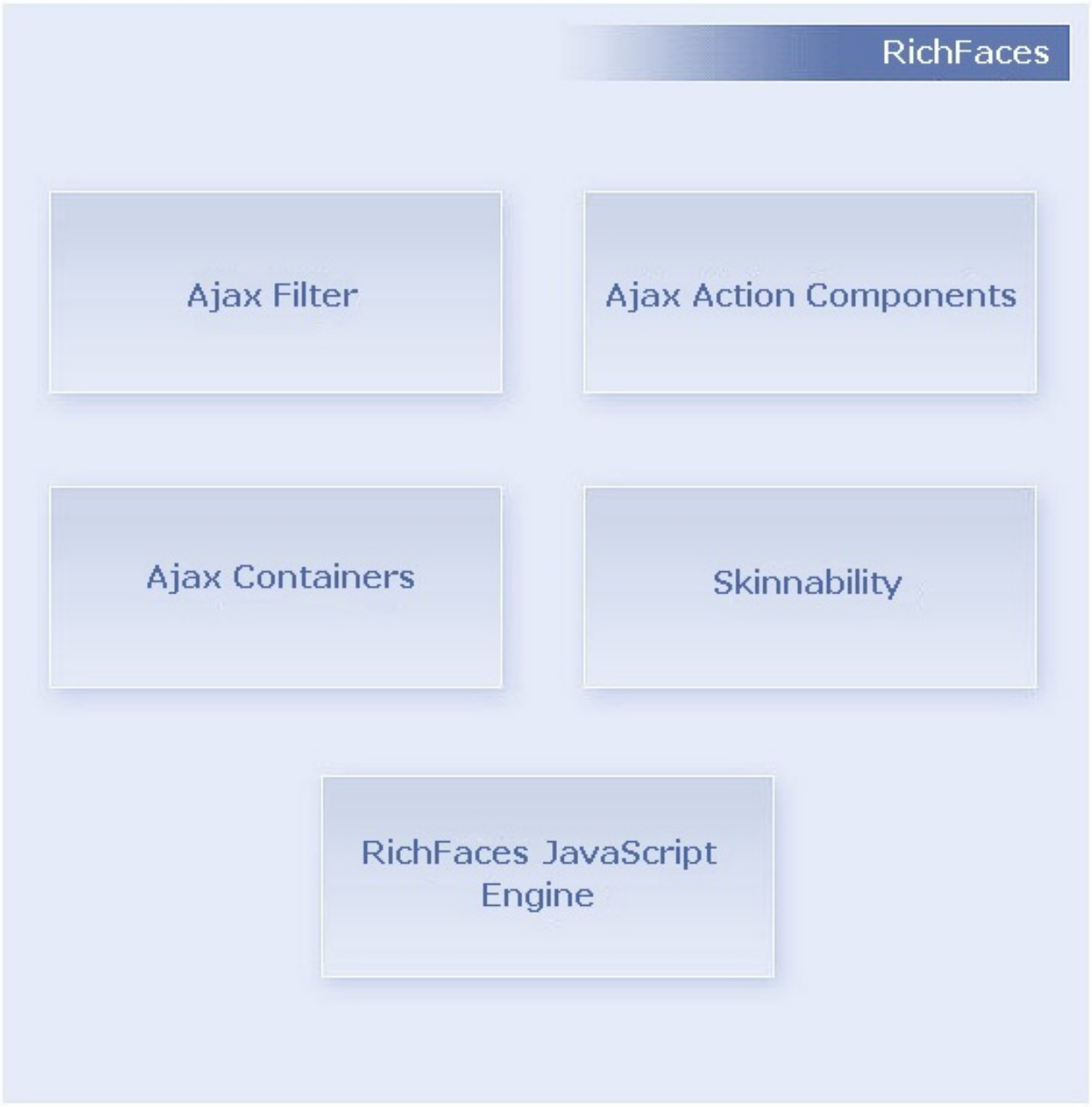


Figure 4.2. Core AJAX component structure

AJAX Filter.

To make the most of RichFaces, you should register a `Filter` in your application's `web.xml`. The `Filter` recognizes multiple request types. The sequence diagram in Figure 5.3 shows the differences in processing between a *regular* JSF request and an AJAX request.

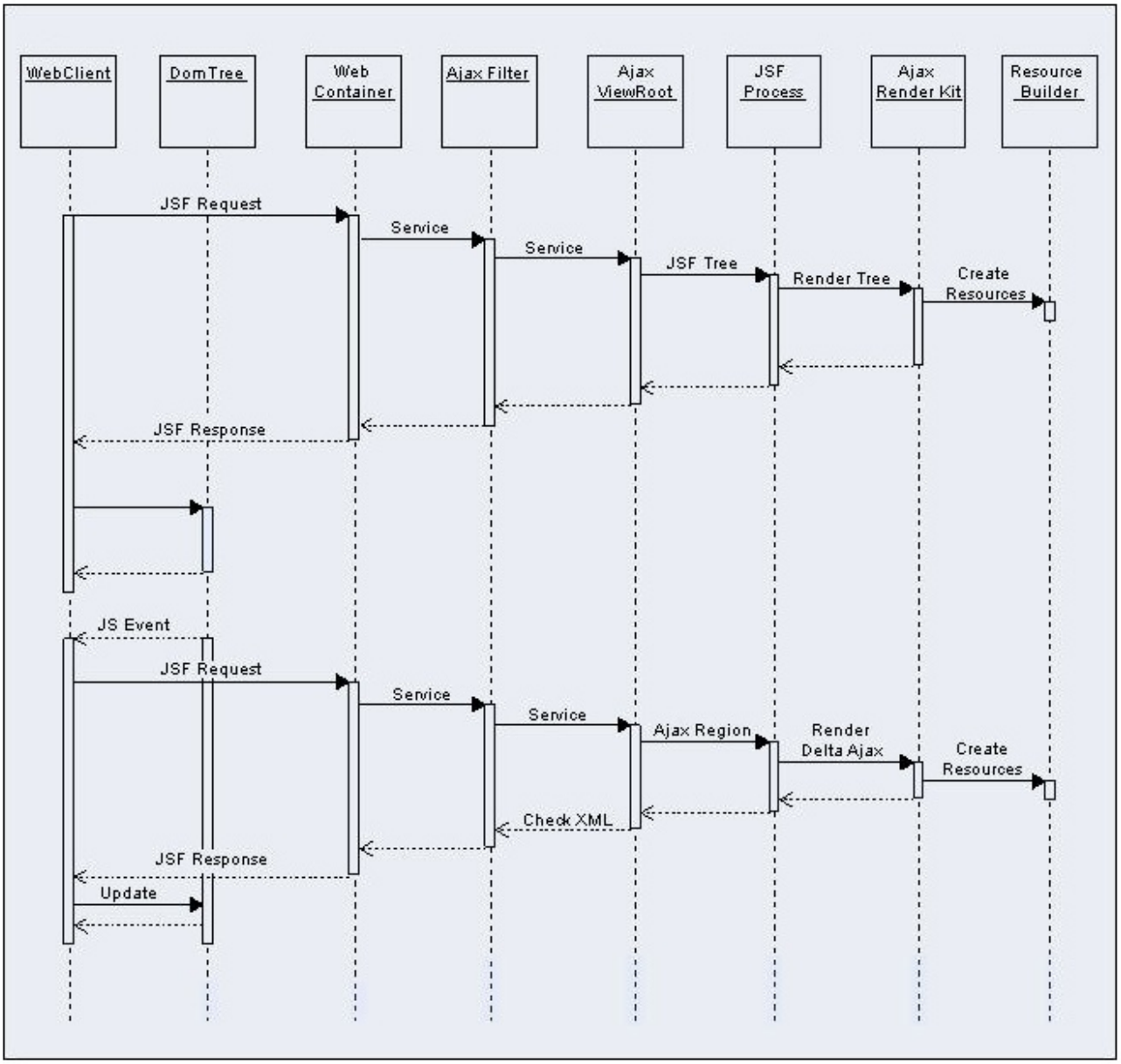


Figure 4.3. Request processing sequence diagram

In either case, the required static or dynamic resource information that your application requests is registered in the **`ResourceBuilder`** class.

When a resource request is issued, the RichFaces filter checks the **`Resource Cache`** for this resource. If it is present, the resource is returned to the client. Otherwise, the filter searches for the resource among those registered in the **`ResourceBuilder`**. If the resource is registered, the RichFaces filter requests that the **`ResourceBuilder`** creates (delivers) the resource.

The diagram that follows illustrates the process of requesting a resource.

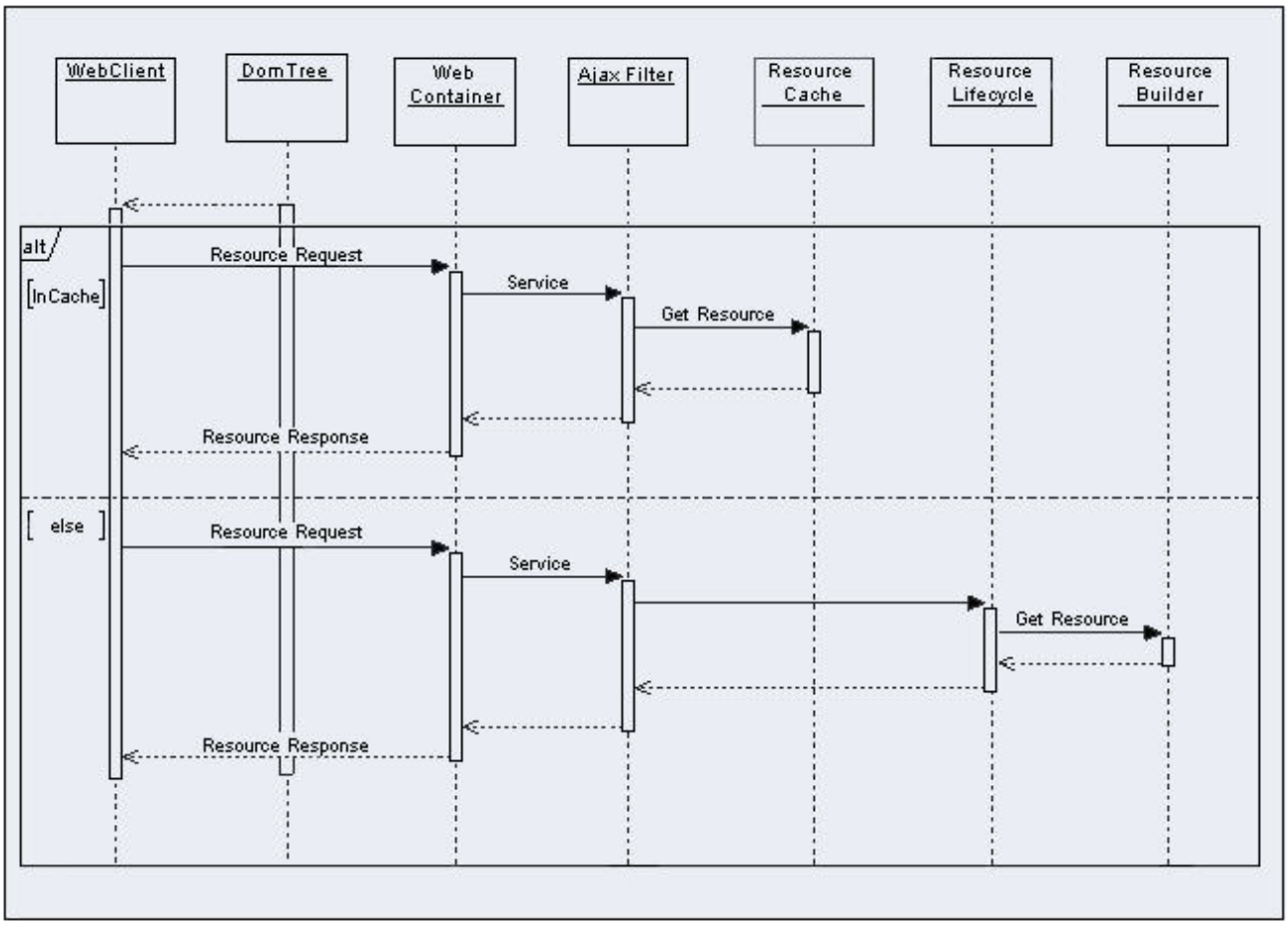


Figure 4.4. Resource request sequence diagram

AJAX Action Components

AJAX Action components are used to send AJAX requests from the client side. There are a number of AJAX Action components, including **<a4j:commandButton>**, **<a4j:commandLink>**, **<a4j:poll>**, and **<a4j:support>**.

AJAX Containers

AjaxContainer is an interface that defines an area on your JSF page that should be decoded during an AJAX request. **AjaxViewRoot** and **AjaxRegion** are both implementations of this interface.

JavaScript Engine

The RichFaces JavaScript Engine runs on the client side, and updates different areas of your JSF page based on information from the AJAX response. This JavaScript code operates automatically, so there is no need to use it directly.

4.3. REQUEST ERRORS AND SESSION EXPIRATION HANDLING

RichFaces lets you redefine the standard handlers responsible for processing exceptions. We recommend defining your own JavaScript, which will be executed when exceptional situations occur.

Add the following code to **web.xml**:

```
<context-param>
 <param-name>org.ajax4jsf.handleViewExpiredOnClient</param-name>
 <param-value>true</param-value>
```

```
</context-param>
```

4.3.1. Request Errors Handling

To execute your own code on the client in the event of an error during an AJAX request, you must redefine the standard **A4J.AJAX.onError** method like so:

```
 A4J.AJAX.onError = function(req, status, message){
    window.alert("Custom onError handler "+message);
}
```

This function accepts the following as parameters:

req

a parameter string of a request that calls an error

status

the number of an error returned by the server

message

a default message for the given error

Therefore, you can create your own handler that is called when timeouts, internal server errors, etc. occur.

4.3.2. Session Expired Handling

You can also redefine the **onExpired** framework method that is called on the **SessionExpiration** event.

Example:

```
A4J.AJAX.onExpired = function(loc, expiredMsg){
    if(window.confirm("Custom onExpired handler "+expiredMsg+" for a
location: "+loc)){
      return loc;
    } else {
     return false;
    }
}
```

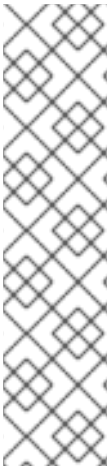
This function can take the following parameters:

loc

the URL of the current page (can be updated on demand)

expiredMsg

a default message for display in the event of **SessionExpiration**.



NOTE

Customized **onExpire** handlers do not work under MyFaces. MyFaces handles exceptions by internally generating a debug page. To prevent this behavior, use the following:

```
...
<context-param>
 <param-name>org.apache.myfaces.ERROR_HANDLING</param-name>
 <param-value>false</param-value>
</context-param>
...
```

4.4. SKINNABILITY

4.4.1. Why Skinnability

If you look at any CSS (Cascading Style Sheets) file in an enterprise application, you will notice how often the same color is noted. Standard CSS cannot define a particular color abstractly as a panel header color, the background color of an active pop-up menu item, a separator color, etc. To define common interface styles, you must copy the same value multiple times, and the more interfaces you have, the more repetition is required.

Therefore, if you want to change the palette of an application, you must change all interrelating values, or your interface can appear clumsy. If a customer wants to be able to adjust their interface's look and feel in real time, you must be able to alter several CSS files, each of which will contain the same value multiple times.

You can solve these problems with the *skins* that are built into and fully implemented in RichFaces. Every named skin has *skin parameters* that define a palette and other attributes of the user interface. By changing a few skin parameters, you can alter the appearance of dozens of components simultaneously, without interfering with interface consistency.

The **skinnability** feature cannot completely replace standard CSS, and does not eliminate its usage. Instead, it is a high-level extension of standard CSS that can be used in combination with regular CSS declarations. You can also refer to skin parameters in CSS through the JSF Expression Language. This lets you completely synchronize the appearance of all elements in your pages.

4.4.2. Using Skinnability

RichFaces *skinnability* is designed for use alongside:

- skin parameters defined in the RichFaces framework,
- predefined CSS classes for components, and
- user style classes.

A component's color scheme can be applied to its elements using any of three style classes:

- **A default style class inserted into the framework**

  This contains style parameters that are linked to some constants from a skin. It is defined for every component and specifies a default level of representation. You can modify an application interface by changing the values of the skin parameters.

- **A style class of skin extension**

  This class name is defined for every component element, and inserted into the framework to let you define a class with the same name in your CSS files. This lets you easily extend the appearance of all components that use this class.

- **User style class**

  You can use one of the **styleClass** parameters to define your own class for component elements. As a result, the appearance of one particular component is changed according to a CSS style parameter specified in the class.

4.4.3. Example

The following is an example of a simple *panel* component:

```
<rich:panel> ... </rich:panel>
```

This code generates a panel component on a page, which consists of two elements: a wrapper ** ** element and a ** ** element for the panel body with the specified style properties. The wrapper ** ** element will look like this:

```
<div class="dr-pnl rich-panel">
     ...
</div>
```

dr-pnl is a CSS class that is specified in the framework via skin parameters:

- **background-color** is defined with **generalBackgroundColor**
- **border-color** is defined with **panelBorderColor**

You can change all colors for all panels on all pages by changing these skin parameter values. However, if you specify a **<rich:panel>** class on the page, its parameters are also acquired by all panels on this page.

Developers can also change the style properties for panel. For example:

```
<rich:panel styleClass="customClass" />
```

The previous definition could add some style properties from **customClass** to one particular panel. As a result, we will get three styles:

```
<div class="dr_pnl rich-panel customClass">
 ...
</div>
```

4.4.4. Skin Parameters Tables in RichFaces

RichFaces provides eight predefined skin parameters (skins) at the simplest level of common customization:

- DEFAULT

- plain
- emeraldTown
- blueSky
- wine
- japanCherry
- ruby
- classic
- deepMarine

To apply a skin, you must specify a skin name in the `org.richfaces.SKIN` context parameter.

The following table shows the values for each parameter in the **blueSky** skin:

Table 4.1. Colors

Parameter name	Default value
headerBackgroundColor	#BED6F8
headerGradientColor	#F2F7FF
headTextColor	#000000
headerWeightFont	bold
generalBackgroundColor	#FFFFFF
generalTextColor	#000000
generalSizeFont	11px
generalFamilyFont	Arial, Verdana, sans-serif
controlTextColor	#000000
controlBackgroundColor	#FFFFFF
additionalBackgroundColor	#ECF4FE
shadowBackgroundColor	#000000
shadowOpacity	1
panelBorderColor	#BED6F8

Parameter name	Default value
subBorderColor	#FFFFFF
tabBackgroundColor	#C6DEFF
tabDisabledTextColor	#8DB7F3
trimColor	#D6E6FB
tipBackgroundColor	#FAE6B0
tipBorderColor	#E5973E
selectControlColor	#E79A00
generalLinkColor	#0078D0
hoverLinkColor	#0090FF
visitedLinkColor	#0090FF

Table 4.2. Fonts

Parameter name	Default value
headerSizeFont	11px
headerFamilyFont	Arial, Verdana, sans-serif
tabSizeFont	11px
tabFamilyFont	Arial, Verdana, sans-serif
buttonSizeFont	11px
buttonFamilyFont	Arial, Verdana, sans-serif
tableBackgroundColor	#FFFFFF
tableFooterBackgroundColor	#cccccc
tableSubfooterBackgroundColor	#f1f1f1
tableBorderColor	#C0C0C0

The **plain** skin was added in version 3.0.2. It has no parameters, and is important when embedding RichFaces components into existing projects with their own styles.

4.4.5. Creating and Using Your Own Skin File

To create your own skin file:

- Create a file. In it, define skin constants to be used by style classes (see Section 4.4.4, "Skin Parameters Tables in RichFaces"). The name of the skin file should follow this format: **<name>.skin.properties**. (For examples of this file, see the RichFaces predefined skin parameters: **blueSky**, **classic**, **deepMarine**, etc. These files are located in the **richfaces-impl-xxxxx.jar** archive in the **/META-INF/skins** folder.

- Add the skin definition **<contex-param>** to the **web.xml** of your application, like so:

```
...
<context-param>
     <param-name>org.richfaces.SKIN</param-name>
     <param-value>name</param-value>
</context-param>
...
```

- Place your **<name>.skin.properties** file in either your **/META-INF/skins** or **/WEB-INF/classes** directory.

4.4.6. Built-in Skinnability in RichFaces

RichFaces lets you incorporate skins into your user interface (UI) design. This framework lets you use named skin parameters in your properties files to control skin appearance consistently across a set of components. You can see examples of predefined skins at: http://livedemo.exadel.com/richfaces-demo/

Skins let you define a style in which to render standard JSF components and custom JSF components built with RichFaces. You can experiment with skins by following these steps:

- Create a custom render kit and register it in the **faces-config.xml** like so:

```
<render-kit>
     <render-kit-id>NEW_SKIN</render-kit-id>
     <render-kit-
class>org.ajax4jsf.framework.renderer.ChameleonRenderKitImpl</render
-kit-class>
</render-kit>
```

- Next, create and register custom renderers for the component based on the look-and-feel predefined variables:

```
<renderer>
 <component-family>javax.faces.Command</component-family>
    <renderer-type>javax.faces.Link</renderer-type>
    <renderer-class>newskin.HtmlCommandLinkRenderer</renderer-class>
</renderer>
```

- Finally, place a properties file with skin parameters into the class path root. There are two

requirements for the properties file:

- The file must be named ***skinName*.skin.properties**. In this case, we would call it **newskin.skin.properties**.
- The first line in this file should be **render.kit=*render-kit-id***. In this case, we would use **render.kit=NEW_SKIN**.

More information about creating custom renderers can be found at:
http://java.sun.com/javaee/javaserverfaces/reference/docs/index.html.

4.4.7. Changing skin in runtime

You can change skins during runtime by defining the following EL-expression in your **web.xml**.

```
<context-param>
 <param-name>org.richfaces.SKIN</param-name>
 <param-value>#{skinBean.skin}</param-value>
</context-param>
```

The **skinBean** code looks like this:

```
public class SkinBean {

 private String skin;

 public String getSkin() {
  return skin;
 }
 public void setSkin(String skin) {
  this.skin = skin;
 }
}
```

You must also set the **skin** property's initial value in the configuration file. To set **classic**:

```
<managed-bean>
 <managed-bean-name>skinBean</managed-bean-name>
 <managed-bean-class>SkinBean</managed-bean-class>
 <managed-bean-scope>session</managed-bean-scope>
 <managed-property>
  <property-name>skin</property-name>
  <value>classic</value>
   </managed-property>
</managed-bean>
```

You can also change the properties of the default skin. To do so, edit the properties of the default skin. The following shows you example page code:

```
<h:form>
     <div style="display: block; float: left">
          <h:selectOneRadio value="#{skinBean.skin}" border="0"
layout="pageDirection" title="Changing skin" style="font-size: 8; font-
family: comic" onchange="submit()">
```

```
                <f:selectItem itemLabel="plain" itemValue="plain" />
  <f:selectItem itemLabel="emeraldTown" itemValue="emeraldTown" />
  <f:selectItem itemLabel="blueSky" itemValue="blueSky" />
  <f:selectItem itemLabel="wine" itemValue="wine" />
  <f:selectItem itemLabel="japanCherry" itemValue="japanCherry" />
  <f:selectItem itemLabel="ruby" itemValue="ruby" />
  <f:selectItem itemLabel="classic" itemValue="classic" />
  <f:selectItem itemLabel="laguna" itemValue="laguna" />
  <f:selectItem itemLabel="deepMarine" itemValue="deepMarine" />
  <f:selectItem itemLabel="blueSky Modified" itemValue="blueSkyModify" />
         </h:selectOneRadio>
     </div>
     <div style="display: block; float: left">
          <rich:panelBar height="100" width="200">
               <rich:panelBarItem label="Item 1" style="font-family:
monospace; font-size: 12;">
      Changing skin in runtime
 </rich:panelBarItem>

 <rich:panelBarItem label="Item 2" style="font-family: monospace; font-
size: 12;">
      This is a result of the modification "blueSky" skin
 </rich:panelBarItem>
          </rich:panelBar>
     </div>
</h:form>
```

The above code will generate the following list of options:

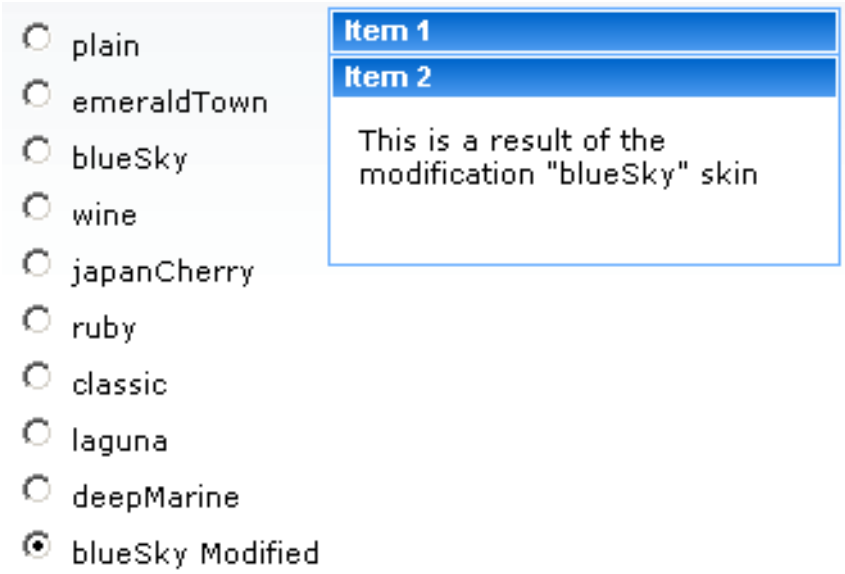


Figure 4.5. Changing skin in runtime

4.4.8. Standard Controls Skinning

This feature is designed to unify the look and feel of standard HTML elements and RichFaces components. Skinning can be applied to all controls on a page based on element names and attribute types (where applicable). This feature also provides a set of CSS styles that let skins be applied by assigning `rich-*` classes to particular elements, or to a container of elements that nests controls.

Standard Controls Skinning provides two levels of skinning: *Basic* and *Extended*. The level used depends

on the browser type detected. If the browser type cannot be detected, **Extended** is used. However, if you want to explicitly specify the level to be applied, add a **org.richfaces.CONTROL_SKINNING_LEVEL** context parameter to your **web.xml** and set the value to either **basic** or **extended**.

- The *Basic* level provides customization for only basic style properties. Basic skinning is applied to the following browsers:
  - Internet Explorer 6
  - Internet Explorer 7 in BackCompat mode (see document.compatMode property in MSDN)
  - Opera
  - Safari
- The *Extended* level introduces a broader number of style properties on top of basic skinning, and is applied to browsers with rich visual styling control capabilities. The following browsers support Extended skinning:
  - Mozilla Firefox
  - Internet Explorer 7 in Standards-compliant mode (CSS1Compat mode)

The following elements can be modified with skins:

- **input**
- **select**
- **textarea**
- **keygen**
- **isindex**
- **legend**
- **fieldset**
- **hr**
- **a** (together with the **a:hover**, **a:visited** pseudo-elements)

There are two ways to initialize skinning for standard HTML controls:

- add the **org.richfaces.CONTROL_SKINNING** parameter to **web.xml**. **org.richfaces.CONTROL_SKINNING** takes **enable** and **disable** as parameters. This method implies that skinning style properties are applied per-element and attribute type (where applicable). No additional steps are required. See the Section 4.4.8.1, “Standard Level” and Section 4.4.8.2, “Extended level” tables for elements to which skinning can be applied.
- add the **org.richfaces.CONTROL_SKINNING_CLASSES** parameter to **web.xml**. **org.richfaces.CONTROL_SKINNING_CLASSES** takes **enable** and **disable** as parameters. When enabled, you are provided with a set of predefined CSS classes to apply skins to your HTML components.

Enabling **`org.richfaces.CONTROL_SKINNING_CLASSES`** provides you style classes that can be applied to:

- basic elements nested within elements with a *rich-container* class. For example:

```
...
.rich-container select {
   //class content
}
...
```

- Elements with a class name that corresponds to one of the basic element names or types are mapped with the **`rich-<elementName>[-<elementType>]`** scheme, as in the following example:

```
...
.rich-select {
  //class content
}

.rich-input-text {
  //class content
}

...
```

NOTE

Elements are given classes depending upon their **`link`** type and pseudo-class name, for example, **`rich-link`**, **`rich-link-hover`**, **`rich-link-visited`**

The predefined rich CSS classes provided can be used as classes for both basic and complex HTML elements.

The following code snippet shows several elements as an example:

```
...
<u:selector name=".rich-box-bgcolor-header">
     <u:style name="background-color" skin="headerBackgroundColor" />
</u:selector>
<u:selector name=".rich-box-bgcolor-general">
     <u:style name="background-color" skin="generalBackgroundColor" />
</u:selector>
...
//gradient elements
...
<u:selector name=".rich-gradient-menu">
     <u:style name="background-image">
          <f:resource
f:key="org.richfaces.renderkit.html.gradientimages.MenuGradientImage"/>
     </u:style>
     <u:style name="background-repeat" value="repeat-x" />
</u:selector>
<u:selector name=".rich-gradient-tab">
```

```
     <u:style name="background-image">
          <f:resource
f:key="org.richfaces.renderkit.html.gradientimages.TabGradientImage"/>
     </u:style>
     <u:style name="background-repeat" value="repeat-x" />
</u:selector>
...
```

For a more thorough look at standard component skinning, we recommend exploring the CSS files located in the **`ui/core/src/main/resources/org/richfaces/`** directory of the RichFaces SVN repository.

4.4.8.1. Standard Level

Table 4.3. HTML Element Skin Bindings for input, select, textarea, button, keygen, isindex and legend

CSS Properties	Skin Parameters
font-size	generalSizeFont
font-family	generalFamilyFont
color	controlTextColor

Table 4.4. HTML Element Skin Bindings for fieldset

CSS Properties	Skin Parameters
border-color	panelBorderColor

Table 4.5. HTML Element Skin Bindings for hr

CSS Properties	Skin Parameters
border-color	panelBorderColor

Table 4.6. HTML Element Skin Bindings for a

CSS Properties	Skin Parameters
color	generalLinkColor

Table 4.7. HTML Element Skin Bindings for a:hover

CSS Properties	Skin Parameters
color	hoverLinkColorgeneralLinkColor

Table 4.8. HTML Element Skin Bindings for a:visited

CSS Properties	Skin Parameters
color	visitedLinkColor

Table 4.9. Rich Elements Skin Bindings for .rich-input, .rich-select, .rich-textarea, .rich-keygen, .rich-isindex, .rich-link

CSS Properties	Skin Parameters
font-size	generalSizeFont
font-family	generalFamilyFont
color	controlTextColor

Table 4.10. Rich Element Skin Bindings for .rich-fieldset

CSS Properties	Skin Parameters
border-color	panelBorderColor

Table 4.11. Rich Element Skin Bindings for .rich-hr

CSS Properties	Skin Parameters
border-color	panelBorderColor
border-width	1px
border-style	solid

Table 4.12. Rich Element Skin Bindings for .rich-link

CSS Properties	Skin Parameters
color	generalLinkColor

Table 4.13. Rich Element Skin Bindings for .rich-link:hover

CSS Properties	Skin Parameters
color	hoverLinkColor

Table 4.14. Rich Element Skin Bindings for .rich-link:visited

CSS Properties	Skin Parameters
color	visitedLinkColor

Table 4.15. Rich Element Skin Bindings for .rich-field

CSS Properties	Skin parameters/Value
border-width	1px
border-style	inset
border-color	panelBorderColor
background-color	controlBackgroundColor
background-repeat	no-repeat
background-position	1px 1px

Table 4.16. Rich Element Skin Bindings for .rich-field-edit

CSS Properties	Skin Parameters
border-width	1px
border-style	inset
border-color	panelBorderColor
background-color	editBackgroundColor

Table 4.17. Rich Element Skin Bindings for .rich-field-error

CSS Properties	Skin Parameters
border-width	1px
border-style	inset
border-color	panelBorderColor
background-color	warningBackgroundColor
background-repeat	no-repeat

CSS Properties	Skin Parameters
background-position	center left
padding-left	7px

Table 4.18. Rich Element Skin Bindings for .rich-button, .rich-button-disabled, .rich-button-over

CSS Properties	Skin Parameters
border-width	1px
border-style	solid
border-color	panelBorderColor
background-color	trimColor
padding	2px 10px 2px 10px
text-align	center
cursor	pointer
background-repeat	repeat-x
background-position	top left

Table 4.19. Rich Element Skin Bindings for .rich-button-press

CSS Properties	Skin Parameters
background-position	bottom left

Table 4.20. Rich Element Skin Bindings for .rich-container fieldset, .rich-fieldset

CSS Properties	Skin Parameters
border-color	panelBorderColor
border-width	1px
border-style	solid
padding	10px

CSS Properties	Skin Parameters
padding	10px

Table 4.21. Rich Element Skin Bindings for .rich-legend

CSS Properties	Skin Parameters
font-size	generalSizeFont
font-family	generalFamilyFont
color	controlTextColor
font-weight	bold

Table 4.22. Rich Element Skin Bindings for .rich-form

CSS Properties	Skin Parameters
padding	0px
margin	0px

4.4.8.2. Extended level

Table 4.23. HTML Element Skin Bindings for input, select, textarea, button, keygen, isindex

CSS Properties	Skin Parameters
border-width	1px
border-color	panelBorderColor
color	controlTextColor

Table 4.24. HTML Element Skin Bindings for *\|button

CSS Properties	Skin Parameters
border-color	panelBorderColor
font-size	generalSizeFont
font-family	generalFamilyFont

CSS Properties	Skin Parameters
color	headerTextColor
background-color	headerBackgroundColor
background-image	org.richfaces.renderkit.html.images.ButtonBackgroundImage

Table 4.25. HTML Element Skin Bindings for button[type=button], button[type=reset], button[type=submit], input[type=reset], input[type=submit], input[type=button]

CSS Properties	Skin Parameters
border-color	panelBorderColor
font-size	generalSizeFont
font-family	generalFamilyFont
color	headerTextColor
background-color	headerBackgroundColor
background-image	org.richfaces.renderkit.html.images.ButtonBackgroundImage

Table 4.26. HTML Element Skin Bindings for *|button[disabled], .rich-container *|button[disabled], .rich-button-disabled

CSS Properties	Skin Parameters
color	tabDisabledTextColor
border-color	tableFooterBackgroundColor
background-color	tableFooterBackgroundColor
background-image	org.richfaces.renderkit.html.images.ButtonDisabledBackgroundImage

Table 4.27. HTML Element Skin Bindings for .rich-button-disabled, .rich-container button[type="button"][disabled], .rich-button-button-disabled, .rich-container button[type="reset"][disabled], .rich-button-reset-disabled, .rich-container button[type="submit"][disabled], .rich-button-submit-disabled, .rich-container input[type="reset"][disabled], .rich-input-reset-disabled, .rich-container input[type="submit"][disabled], .rich-input-submit-disabled, .rich-container input[type="button"][disabled], .rich-input-button-disabled

CSS Properties	Skin Parameters
color	tabDisabledTextColor
background-color	tableFooterBackgroundColor
border-color	tableFooterBackgroundColor
background-image	org.richfaces.renderkit.html.images.ButtonDisabledBackgroundImage

Table 4.28. HTML Element Skin Bindings for *button[type="button"][disabled], button[type="reset"][disabled], button[type="submit"][disabled], input[type="reset"][disabled], input[type="submit"][disabled], input[type="button"][disabled]

CSS Properties	Skin Parameters
color	tabDisabledTextColor
border-color	tableFooterBackgroundColor
background-color	tableFooterBackgroundColor

Table 4.29. HTML Element Skin Bindings for *|textarea

CSS Properties	Skin Parameters
border-color	panelBorderColor
font-size	generalSizeFont
font-family	generalFamilyFont
color	controlTextColor
background-color	controlBackgroundColor
background-image	org.richfaces.renderkit.html.images.InputBackgroundImage

Table 4.30. HTML Element Skin Bindings for textarea[type=textarea], input[type=text], input[type=password], select

CSS Properties	Skin Parameters
border-color	panelBorderColor

CSS Properties	Skin Parameters
font-size	generalSizeFont
font-family	generalFamilyFont
color	controlTextColor
background-color	controlBackgroundColor
background-image	org.richfaces.renderkit.html.images.InputBackgroundImage

Table 4.31. HTML Element Skin Bindings for *|textarea[disabled], .rich-container *|textarea[disabled]

CSS Properties	Skin Parameters
color	tableBorderColor

Table 4.32. textarea[type="textarea"][disabled], input[type="text"][disabled], input[type="password"][disabled]

CSS Properties	Skin Parameters
color	tableBorderColor

Table 4.33. textarea[type="textarea"][disabled], input[type="text"][disabled], input[type="password"][disabled]

CSS Properties	Skin Parameters
color	tableBorderColor

NOTE

The basic skinning level can fail if the **ajaxPortlet** is configured as follows:

```
...
<portlet>
   <portlet-name>ajaxPortlet</portlet-name>
   <header-content>
      <script src="/faces/rfRes/org/ajax4jsf/framework.pack.js"
type="text/javascript" />
      <script src="/faces/rfRes/org/richfaces/ui.pack.js"
type="text/javascript" />
      <link rel="stylesheet" type="text/css"
href="/faces/rfRes/org/richfaces/skin.xcss" />
   </header-content>
</portlet>
...
```

4.4.9. Client-side Script for Extended Skinning Support

Extended skinning of standard HTML controls is applied automatically: the browser type is detected, and if a browser does not fully support extended skinning, only basic skinning is applied.

There are some problems with standard HTML controls in certain browsers (Opera and Safari) that may cause problems if you wish to skin your RichFaces components and standard HTML controls manually.

To disable skinnability, set the **org.richfaces.LoadStyleStrategy** parameter to **NONE** in your **web.xml** file, like so:

```
...
<context-param>
 <param-name>org.richfaces.LoadStyleStrategy</param-name>
 <param-value>NONE</param-value>
</context-param>
...
```

You should also include the style sheets that apply skins to RichFaces components and standard HTML controls.

To work around the problem of extended skinning in Opera and Safari, the **skinning.js** client script is added to the RichFaces library. This detects the browser type and enables extended skinning only for browsers that fully support it.

Activate the script by inserting the following JavaScript into your page:

```
<script type="text/javascript">
 window.RICH_FACES_EXTENDED_SKINNING_ON = true;
</script>
```

When no script-loading strategy is used and extended skinning is enabled, a warning message appears in the console.

You must also specify the **media** attribute in the **link** tag. This adds the **extended_both.xcss** style sheet to **rich-extended-skinning**.

To include your style sheets to the page when automatic skinnability is disabled, add the following:

```
<link href='/YOUR_PROJECT_NAME/a4j_3_2_2-
SNAPSHOTorg/richfaces/renderkit/html/css/basic_both.xcss/DATB/eAF7sqpgb-
jyGdIAFrMEaw__.jsf' type='text/css' rel='stylesheet' class='component' />
<link media='rich-extended-skinning' href='/ YOUR_PROJECT_NAME /a4j_3_2_2-
SNAPSHOTorg/richfaces/renderkit/html/css/extended_both.xcss/DATB/eAF7sqpgb
-jyGdIAFrMEaw__.jsf' type='text/css' rel='stylesheet' class='component' />
<link href='/ YOUR_PROJECT_NAME /a4j_3_2_2-
SNAPSHOT/org/richfaces/skin.xcss/DATB/eAF7sqpgb-jyGdIAFrMEaw__.jsf'
type='text/css' rel='stylesheet' class='component' />
```

NOTE

The Base64 encoder now uses **!** instead of **.**, so remember to use the **a4j/versionXXX** resources prefix instead of **a4j_versionXXX**.

4.4.10. XCSS File Format

Cross-site Cascading Style Sheet (XCSS) files are the core of RichFaces component skinnability. XCSS is XML-formatted CSS that extends the skinning process. RichFaces parses the XCSS file containing all look and feel parameters of a particular component and compiles the information into a standard CSS file that can be recognized by a web browser.

The XCSS file contains CSS properties and skin parameter mappings. Mapping a CSS selector to a skin parameter can be done with **< u:selector >** and **< u:style>** XML tags, which define the mapping structure, as in the following example:

```
...
<u:selector name=".rich-component-name">
 <u:style name="background-color" skin="additionalBackgroundColor" />
 <u:style name="border-color" skin="tableBorderColor" />
 <u:style name="border-width" skin="tableBorderWidth" />
 <u:style name="border-style" value="solid" />
</u:selector>
...
```

During processing, this code will be parsed and assembled into a standard CSS format, like so:

```
...
.rich-component-name {
     background-color: additionalBackgroundColor; /*the value of the
constant defined by your skin*/
     border-color: tableBorderColor; /*the value of the constant defined
by your skin*/
     border-width: tableBorderWidth; /*the value of the constant defined
by your skin*/
     border-style: solid;
}
...
```

The **name** attribute of **<u:selector>** defines the CSS selector, while the **name** attribute of the **<u:style>** tag defines the skin constant that is mapped to a CSS property. You can also use the **value** attribute of the **<u:style>** tag to assign a value to a CSS property.

CSS selectors with identical skin properties can be included in a comma-separated list:

```
...
<u:selector name=".rich-ordering-control-disabled, .rich-ordering-control-
top, .rich-ordering-control-bottom, .rich-ordering-control-up, .rich-
ordering-control-down">
 <u:style name="border-color" skin="tableBorderColor" />
</u:selector>
...
```

4.4.11. Plug-n-Skin

Plug-n-Skin lets you easily create, customize, and plug in a custom skin to your project. You can create skins based on the parameters of predefined RichFaces skins. Plug-n-Skin also lets you unify the appearance of rich controls with standard HTML elements. This section contains step-by-step instructions for creating your own skin with Plug-n-Skin.

First, use Maven to create a template for your new skin. (You can find more information about configuring Maven for RichFaces in the JBoss wiki article. These Maven instructions can be copied and pasted into the command line interface to execute them.

```
...
mvn archetype:create
-DarchetypeGroupId=org.richfaces.cdk
-DarchetypeArtifactId=maven-archetype-plug-n-skin
-DarchetypeVersion=RF-VERSION
-DartifactId=ARTIFACT-ID
-DgroupId=GROUP-ID
-Dversion=VERSION
...
```

Primary keys for the command:

- **archetypeVersion** — indicates the RichFaces version; for example, **3.3.1.GA**
- **artifactId** — the artifact ID of the project
- **groupId** — the group ID of the project
- **version** — the version of the project you create. By default, this is set to **1.0.-SNAPSHOT**

This operation creates a directory named after your **ARTIFACT-ID**. The directory contains a template of the Maven project.

The following steps will guide you though creating of the skin itself.

Run the following command from the root directory of the Maven project. (This directory will contain your **pom.xml** file.)

```
...
mvn cdk:add-skin -Dname=SKIN-NAME -Dpackage=SKIN-PACKAGE
```

```
...
```

Primary keys for the command:

- **name** – defines the name of the new skin
- **package** – the base package of the skin. By default, the project's **groupId** is used.

Additional optional keys for the command:

- **baseSkin** – defines the name of the base skin.
- **createExt** – if set to **true**, extended CSS classes are added. For more information, please, see Section 4.4.8, "Standard Controls Skinning".

Refer to Table 4.34, "Files and Folders Created By the **mvn cdk:add-skin -Dname=SKIN-NAME -Dpackage=SKIN-PACKAGE** Command" for which files are created by the command.

Table 4.34. Files and Folders Created By the `mvn cdk:add-skin -Dname=SKIN-NAME -Dpackage=SKIN-PACKAGE` Command

File Name	Location	Description
BaseImage.java	**\src\main\java\SKIN-PACKAGE\SKIN-NAME\images**	the base class used to store images.
BaseImageTest.java	**\src\test\java\SKIN-PACKAGE\SKIN-NAME\images**	a test version of a class that stores images.
XCSS files	**\src\main\resources\SKIN-PACKAGE\SKIN-NAME\css**	define the new look of RichFaces components affected by the new skin.

File Name	Location	Description
***SKIN-NAME*.properties**	**\src\main\resources\SKIN-PACKAGE\SKIN-NAME\css**	a file that contains the new skin's properties. The following properties are used to configure the **SKIN-NAME.properties** file: **baseSkin** the name of the skin to be used as a basis for your own skin. The look of the skin you define will be affected by the new style properties. **generalStyleSheet** a path to the style sheet (***SKIN-NAME*.xcss**) that imports your component's style sheets to be modified by the new skin. **extendedStyleSheet** the path to a style sheet that is used to unify the appearance of RichFaces components and standard HTML controls. For additional information, read Section 4.4.8, “Standard Controls Skinning”. **gradientType** a predefined property to set the type of gradient applied to the new skin. Possible values are **glass**, **plastic**, **plain**. More information on gradient implementation you can find further in this chapter.
SKIN-NAME.xcss	**src\main\resources\META-INF\skins**	an XCSS file that imports the component's XCSS files to be modified by the new skin.
XCSS files	**\src\main\resources\SKIN-PACKAGE\SKIN-NAME\css**	determine styles for standard controls (**extended_classes.xcss** and **extended.xcss**), if the **createExt** key is set to **true**.

File Name	Location	Description
SKIN-NAME-ext.xcss	**src\main\resources\META-INF\skins**.	imports defining styles for standard controls if **createExt** is set to **true**.
SKIN-NAME-resources.xml	**src\main\config\resources**.	contains descriptions of all files listed previously.

You can now start editing the XCSS files located in **\src\main\resources\SKIN-PACKAGE\SKIN-NAME\css**. Assign new style properties to your selectors (listed in the XCSS files) in either of the following ways:

- Standard CSS coding approach (that is, add CSS properties to the selectors). Remember that the selectors must be within **<f:verbatim> </f:verbatim>** tags. For example:

```
...
.rich-calendar-cell {
     background: #537df8;
}
...
```

- XCSS coding approach (the usual method of creating XCSS files in RichFaces). XCSS tags must be placed *outside* **<f:verbatim> </f:verbatim>** tags.

```
...
<u:selector name=".rich-calendar-cell">
     <u:style name="border-bottom-color" skin="panelBorderColor"/>
     <u:style name="border-right-color" skin="panelBorderColor"/>
     <u:style name="background-color" skin="tableBackgroundColor"/>
     <u:style name="font-size" skin="generalSizeFont"/>
     <u:style name="font-family" skin="generalFamilyFont"/>
</u:selector>
...
```

Once you have performed these steps and edited the XCSS files, build the new skin and plug it into the project. To build the skin, execute the following command from the root directory of your skin project (the directory that contains your **pom.xml** file):

```
...
mvn clean install
...
```

The Plug-n-skin feature also has a number of predefined gradients. The following code can be used to apply a gradient:

```
...
<u:selector name=".rich-combobox-item-selected">
 <u:style name="border-width" value="1px" />
 <u:style name="border-style" value="solid" />
 <u:style name="border-color" skin="newBorder" />
 <u:style name="background-position" value="0% 50%" />
```

```
 <u:style name="background-image">
  <f:resource f:key="org.richfaces.renderkit.html.CustomizeableGradient">
   <f:attribute name="valign" value="middle" />
   <f:attribute name="gradientHeight" value="17px" />
   <f:attribute name="baseColor" skin="headerBackgroundColor" />
   </f:resource>
 </u:style>
</u:selector>
...
```

The **background-image** CSS property is defined with **<f:resource f:key="org.richfaces.renderkit.html.CustomizeableGradient">**, which sets the gradient. The gradient type can be specified in the **SKIN-NAME.properties** with the **gradientType** property, which can be set to **glass**, **plastic**, or **plain**. The gradient can then be adjusted with the **baseColor**, **gradientColor**, **gradientHeight**, **valign** attributes, as seen in the previous code snippet.

You can now use your newly-created skin in your project by adding your new skin parameters to the **web.xml** file, and placing the JAR file containing your skin (located in the **target** directory of your skin project) in the **\WebContent\WEB-INF\lib**.

```
...
<context-param>
    <param-name>org.ajax4jsf.SKIN</param-name>
    <param-value>SKIN-NAME</param-value>
</context-param>
...
```

4.4.11.1. Details of Usage

This section covers some practical aspects of Plug-n-Skin implementation. We assume that you have read the section of the guide describing the Plug-n-Skin prototype creation process.

First, we must create a new skin (as described in the previous section). The following creates a template of the new skin project:

```
mvn archetype:create
-DarchetypeGroupId=org.richfaces.cdk
-DarchetypeArtifactId=maven-archetype-plug-n-skin
-DarchetypeVersion=3.3.1.GA
-DartifactId=P-n-S
-DgroupId=GROUPID
-Dversion=1.0.-SNAPSHOT
```

You can now browse the **P-n-S** directory to view the files and folders created.

Next, use Maven to add all required files to the skin project, like so:

```
mvn cdk:add-skin -DbaseSkin=blueSky  -DcreateExt=true -Dname=PlugnSkinDemo
-Dpackage=SKINPACKAGE
```

As mentioned in the previous section, **-DbaseSkin** defines the RichFaces built-in skin to use as a base, and **-DcreateExt=true**, which determines that the new skin will include XCSS files that unify the appearance of the rich components and the standard HTML controls.

Once your resources have been created, you can begin refining the newly-created skin. Begin by editing the rich components' XCSS files.

As an example of the Plug-n-Skin feature, we will edit some **<rich:calendar>** style attributes and some basic HTML controls. We will show you how to:

- Recolor the background of the current day in the **<rich:calendar>**;
- Recolor a standard HTML submit button;

To edit **<rich:properties>**'s style properties, you must open the **calendar.xcss** file, located in **P-n-S\src\main\resources\skinpackage\plugnskindemo\css**.

In the **calendar.xcss** file, find the **.rich-calendar-today** selector and amend it as follows:**background-color: #075ad1;**. This will change the background color of the current day.

Next we will change the font style of a standard HTML *submit* button. Open the **extended.xcss** file from the **P-n-S\src\main\resources\skinpackage\plugnskindemo\css** directory and insert **font-weight: bold;** between the curly braces of these selectors, like so:

```
button[type="button"], button[type="reset"], button[type="submit"],
input[type="reset"], input[type="submit"], input[type="button"] {
 font-weight: bold;
}
```

The desired changes have now been made, and you can proceed to building the new **PlugnSkinDemo** skin and importing it into the project.

Build the skin by executing **mvn clean install** from the **P-n-S** directory. This creates a **target** directory containing a JAR file with a newly-compiled skin. In our case, the file is named **P-n-S-1.0.-SNAPSHOT.jar**.

Next, import the new **PlugnSkinDemo** skin into your project:

- Copy the **P-n-S-1.0.-SNAPSHOT.jar** file to the **\WebContent\WEB-INF\lib** directory.
- Add the name of the new skin to the **web.xml** file, like so:

```
 <context-param>
 <param-name>org.ajax4jsf.SKIN</param-name>
 <param-value>PlugnSkinDemo</param-value>
</context-param>
```

Remember, standard controls skinning must be enabled in **web.xml**. Add the following to enable standard controls skinning:

```
<context-param>
 <param-name>org.richfaces.CONTROL_SKINNING</param-name>
 <param-value>enable</param-value>
</context-param>
```

The results of each alteration to the skin are shown in the figures that follow:

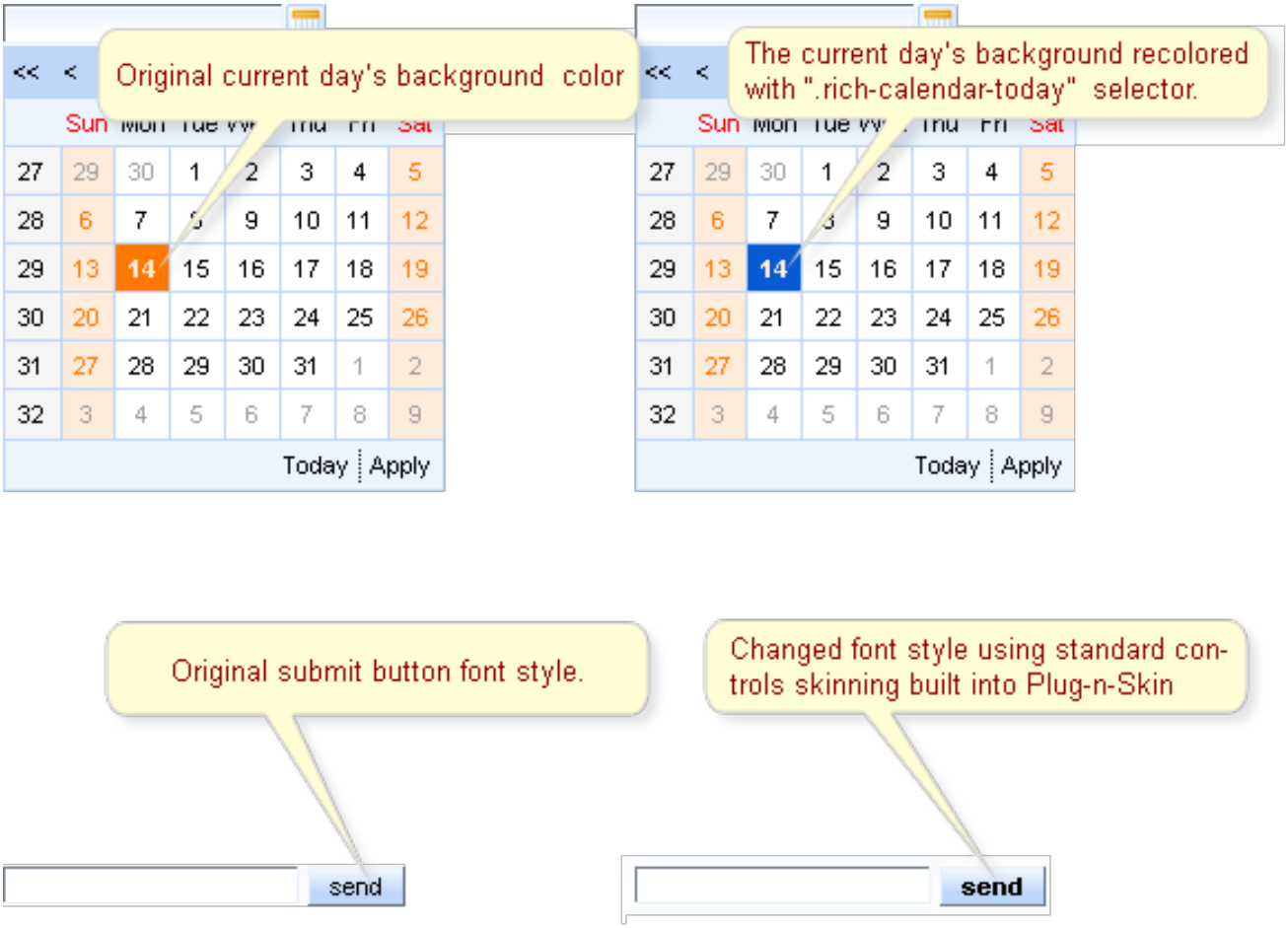


Figure 4.6. Plug-n-Skin feature in action.

4.5. STATE MANAGER API

JSF has an advanced navigation mechanism that lets you define *navigation* from view to view. In a web application, navigation occurs when a user changes from one page to another by clicking on a button, a hyperlink, or another command component. There is no switch mechanism between some logical states of the same view. For example, in *Login/Register dialog*, an existing user signs in with his user name and password, but if a new user attempts to register, an additional field (`Confirm`) is displayed, and button labels and methods are changed when the user clicks the `To register` link:

Figure 4.7. Login Dialog

Figure 4.8. Register Dialog

RichFaces State API lets you easily define a set of states for pages, and properties for these states.

The `States` class interfaces with a map, where the `keySet` defines the State name and the `entrySet` is a `State` map. The `State` map defines the properties, method bindings, or constant state variables of a key or object, where these values may change depending on the active State.

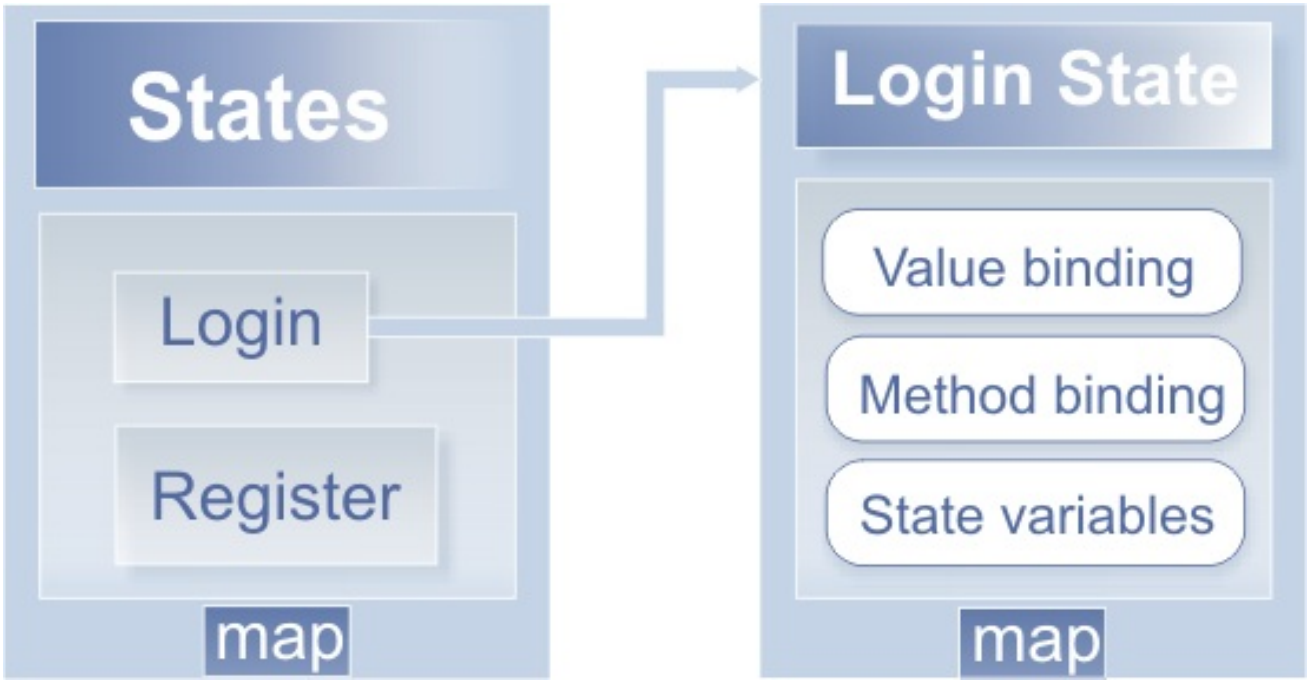


Figure 4.9. RichFaces State API

One of the most convenient features of the RichFaces State API is the ability to navigate between `States`. The API implements changes in `State` through standard JSF navigation. When the action component returns an outcome, the JSF navigation handler (extended through the RichFaces State API) checks whether the outcome is registered as a ***`State`*** *change outcome*. If `true`, the corresponding `State` is activated. If `false`, standard navigation handling is called.

Implement the RichFaces State API like so:

- Register the State Navigation Handler and the EL Resolver in your `faces-config.xml` file:

```
...
<application>
 <navigation-
handler>org.richfaces.ui.application.StateNavigationHandler</navigat
ion-handler>
```

```
 <el-resolver>org.richfaces.el.StateELResolver</el-resolver>
</application>
...
```

- Register an additional application factory in the **faces-config.xml**:

```
...
<factory>
 <application-
factory>org.richfaces.ui.application.StateApplicationFactory</applic
ation-factory>
</factory>
...
```

- Register two managed beans in the **faces-config.xml**:

```
...
<managed-bean>
 <managed-bean-name>state</managed-bean-name>
 <managed-bean-class>org.richfaces.ui.model.States</managed-bean-
class>
 <managed-bean-scope>request</managed-bean-scope>
 <managed-property>
  <property-name>states</property-name>
  <property-class>org.richfaces.ui.model.States</property-class>
  <value>#{config.states}</value>
 </managed-property>
</managed-bean>
<managed-bean>
 <managed-bean-name>config</managed-bean-name>
 <managed-bean-class>org.richfaces.demo.stateApi.Config</managed-
bean-class>
 <managed-bean-scope>none</managed-bean-scope>
</managed-bean>
...
```

One bean (**config**) defines and stores **State** as seen in the following example:

```
...
public class Config {

 /**
  * @return States
  */
 public States getStates() {
  FacesContext facesContext = FacesContext.getCurrentInstance();
  States states = new States();

  // Registering new User State definition
  states.setCurrentState("register"); // Name of the new state

  // Text labels, properties and Labels for controls in "register"
state
  states.put("showConfirm", Boolean.TRUE); // confirm field
rendering
```

```
  states.put("link", "(To login)"); // Switch State link label
  states.put("okBtn", "Register"); // Login/Register button label
  states.put("stateTitle", "Register New User"); // Panel title

  ExpressionFactory expressionFactory =
facesContext.getApplication()
    .getExpressionFactory();

  // Define "registerbean" available under "bean" EL binding on the
page
  ValueExpression beanExpression = expressionFactory
    .createValueExpression(facesContext.getELContext(),
      "#{registerbean}", Bean.class);
  states.put("bean", beanExpression);

  // Define "registeraction" available under "action" EL binding on
the
  // page
  beanExpression =
expressionFactory.createValueExpression(facesContext
    .getELContext(), "#{registeraction}", RegisterAction.class);
  states.put("action", beanExpression);

  // Define method expression inside registeraction binding for this
state
  MethodExpression methodExpression =
expressionFactory.createMethodExpression(
    facesContext.getELContext(), "#{registeraction.ok}",
    String.class, new Class[] {});
  states.put("ok", methodExpression);

  // Outcome for switching to login state definition
  states.setNavigation("switch", "login");

  // Login Existent User State analogous definition
  states.setCurrentState("login");
  states.put("showConfirm", Boolean.FALSE);
  states.put("link", "(To register)");
  states.put("okBtn", "Login");
  states.put("stateTitle", "Login Existing User");

  beanExpression =
expressionFactory.createValueExpression(facesContext
    .getELContext(), "#{loginbean}", Bean.class);
  states.put("bean", beanExpression);

  beanExpression =
expressionFactory.createValueExpression(facesContext
    .getELContext(), "#{loginaction}", LoginAction.class);
  states.put("action", beanExpression);

  methodExpression = expressionFactory.createMethodExpression(
    facesContext.getELContext(), "#{loginaction.ok}",
    String.class, new Class[] {});
  states.put("ok", methodExpression);
```

```
  states.setNavigation("switch", "register");

  return states;
 }
}
...
```

The second bean, with the **org.richfaces.ui.model.States** type (**state**), contains the managed property states, which is bound to the first **config** bean.

- Next, use state bindings on the page, as in the following example:

```
...
<h:panelGrid columns="3">
 <h:outputText value="username" />
 <h:inputText value="#{state.bean.name}" id="name" required="true"
/>
 <h:outputText value="password" />
 <h:inputSecret value="#{state.bean.password}" id="password"
required="true" />
 <h:outputText value="confirm" rendered="#{state.showConfirm}" />
 <h:inputSecret value="#{state.bean.confirmPassword}" rendered="#
{state.showConfirm}" id="confirm" required="true" />
</h:panelGrid>
<a4j:commandButton actionListener="#{state.action.listener}"
action="#{state.ok}" value="#{state.okBtn}" id="action"/>
...
```

To see complete example of the Login/Register dialog, see the RichFaces Live Demo.

4.6. IDENTIFYING USER ROLES

RichFaces also lets you check whether the logged-in user belongs to a certain user role with the **rich:isUserInRole(Object)** function. This function takes a String or a comma-delineated list of Strings, a Collection, etc. as arguments and returns a Boolean value.

As an example, imagine that you need to render some controls only for administrators. To do so, create an administrator role (**admin**) in your **web.xml** file. Then implement authorization that assigns the **admin** role to the user that has logged in as an administrator. Once this has been done, you can use the **rich:isUserInRole(Object)** function with the **rendered** attribute of any component. For example:

```
...
<rich:editor value="#{bean.text}"  rendered="#
{rich:isUserInRole('admin')}" />
...
```

Here, only a logged-in user with an **admin** role can see the text editor, which will not be rendered for users with other roles.

APPENDIX A. REVISION HISTORY

Revision 5.2.0-100.400 **2013-10-31** **Rüdiger Landmann**

Rebuild with publican 4.0.0

Revision 5.2.0-100 **Wed 23 Jan 2013** **Russell Dickenson**

Incorporated changes for JBoss Enterprise Application Platform 5.2.0 GA. For information about documentation changes to this guide, refer to *Release Notes 5.2.0*.

Revision 5.1.2-100 **Thu 8 December 2011** **Russell Dickenson**

Incorporated changes for JBoss Enterprise Application Platform 5.1.2 GA.