Struts Tools Reference Guide

Version: 2.1.0.CR1

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Introduction

If you prefer to develop web applications using Struts technology JBoss Tools also meet your needs. The professional developer toolset provides all necessary editors and wizards for creating Struts resources that enhances the process of building high-quality web applications.



Note

Note that JBoss Tools support the Struts 1.1, 1.2.x versions.

In this guide you will learn how to take advantage of Struts support that JBoss Tools provide.

1.1. Key Features of Struts Tools

For a start, we propose you to look through the table of main features of Struts Tools:

Table 1.1. Key Functionality for Struts Tools

Feature	Benefit	Chapter
Struts Support	Step-by-step wizards for creating a new struts project with a number of predefined templates, importing existing ones and adding struts capabilities to non-struts web projects.	struts support
Support for Struts Configuration File	Working on file using three modes: diagram, tree and source. Synchronization between the modes and full control over the code. Easy moving around the diagram using the Diagram Navigator. Working with struts projects that have multiple modules. Possibility to use Struts configuration file debugger allowing to set break points on struts diagram and then launch the server in debug mode.	graphical editor for struts configuration file debugger
Support for Struts modules	A Struts module (struts-config.xml) is automatically created while creating a new project. There is also possibility to add new ones or edit already existing modules in your existing project or while importing Struts project.	modules
Verification and Validation	All occuring errors will be immediately reported by verification feature, no matter in what view you are working. Constant validation and errors checking allows to catch many of the errors	verification and validation

Feature	Benefit	Chapter
	during development process that significantly reduces development time.	

1.2. Other relevant resources on the topic

All JBoss Developer Studio/JBoss Tools documentation you can find *here* [http://www.jboss.com/ products/devstudio/docs].

The latest documentation builds are available *here* [http://download.jboss.org/jbosstools/nightly-docs/].

Projects

JBoss Tools provide the following functionality when working with Struts:

- Create new Struts projects
- Import (open) existing Struts projects. You can import any project structure
- Add Struts capabilities to any existing Eclipse project
- Import and add Struts capabilities to any existing project created outside Eclipse.

Now, we'll focus on all these points more fully.

2.1. Creating a New Struts Project

JBoss Tools provides a New Struts Project Wizard that radically simplifies the process for getting started with a new Struts project. You just need to follow these steps:

• Select *File > New > Project...* from the menu bar. Then, select *JBoss Tools Web > Struts > Struts Project* in this dialog box. Click *Next:*

()	New Project	×
Select a wizard		
<u>W</u> izards:		
type filter text		
👂 🗁 JBoss jBPM		<u> </u>
▽ 🗁 JBoss Tools Web		
👂 🗁 JSF		
🗢 🗁 Struts		
🕉 Struts Project		
👂 🗁 JPA		=
Plug-in Development		
👂 🗁 Seam		
h Cacina		•
(?) < <u>B</u> ack	<u>N</u> ext >	Enish Cancel

Figure 2.1. Selecting Struts Wizard

• On this form, provide the Project Name. You can also select where to create the project or use the default path.

Next to Struts Environment set which Struts version to use.

9	New Struts Project 🗙
Create Struts Proje	ct 🔊
a brand new project. If	t Wizard is used for creating you already have a pre-existing port Project Wizard to start working
Project Name*	StrutsProject
	✓ Use default path*
Location*	opt/work/workspace_jbds/StrutsProject
Struts Environment*	Struts 1.1
Template*	Struts 1.2 DidTIK
0	Back Next > Finish Cancel

Figure 2.2. Creating Struts Project



You can select the KickStart template, then the project created will include a simple Hello World type application that is ready to run.

9	New Struts Project 🛛 🗙
Create Struts Proje	ct 🚳
a brand new project. I	ct Wizard is used for creating f you already have a pre-existing nport Project Wizard to start working
Project Name*	StrutsProject
	✓ Use default path*
Location*	opt/work/workspace_jbds/StrutsProject
Struts Environment*	Struts 1.1
Template*	Blank
	KickStart
0	< Back Next > Finish Cancel

Figure 2.3. Choosing Struts Template

 Next, you register this application with the current servlet container defined for your workspace (JBoss AS, by default) in order to allow you to test your application more easily while still developing it. A new entry will be added in the servlet container configuration file to enable running the application in-place (called null deployment or link deployment). Uncheck the "Target Server" check box if for some reason you don't want to register your application at this point.

	New Struts Project	
Veb		${}^{\diamond}$
Servlet Version	2.4	
Context Path*	strutsApplication	
Runtime:*	JBoss 4.2 Runtime	New
Target Server:	JBoss Application Server 4.2	New Select All
		Deselect All

Figure 2.4. Registering The Project at Server

• On the next form, you can select the TLD files to include in this project:

😣 New Struts Project 🗙
Tag Libraries Select tag library files you want to use in your project
TLDs
 struts-nested.tld fmt.tld sql.tld c.tld x.tld struts-html.tld struts-bean.tld struts-logic.tld struts-tiles.tld
⑦ < <u>B</u> ack <u>N</u> ext > <u>Finish</u> Cancel

Figure 2.5. Selecting Tag Libraries

After the project is created, you should have the following project structure (if you used the KickStart template):

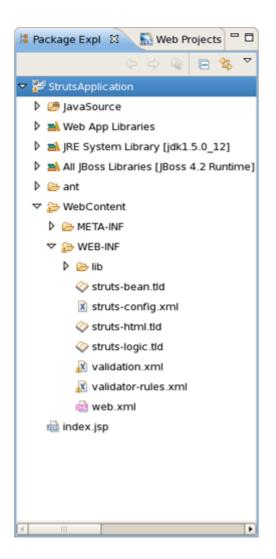


Figure 2.6. Project Structure



Tip:

If you want to hide the jar files from Web App Libraries in view, select the downpointing arrow in the upper right corner, select *Filters...*, check the box next to Name filter patterns (matching names will be hidden), and type *.jar into the field. Then, click OK.

2.2. Importing an Existing Struts Project with Any Structure

For detailed information on migration projects to JBoss Developer Studio see *Migration Guide* [../../../Exadel-migration/html_single/index.html].

2.3. Adding Struts Capability to an Existing Web Application

Here, we'll consider how to add Struts functionality (Struts libraries, tag libraries and a Struts configuration file) to any existing Web application project in your Eclipse workspace.

By adding a Struts Nature to your project, you can now edit files using JBoss Tools editors, such as the *Struts configuration editor* and the JBoss Tools JSP editor. To take advantage of this just right-click the project and select *JBoss Tools > Add Struts Capabilities* from the context menu. This will start the process of adding all necessary libraries and files to make a Web Struts project from your one.

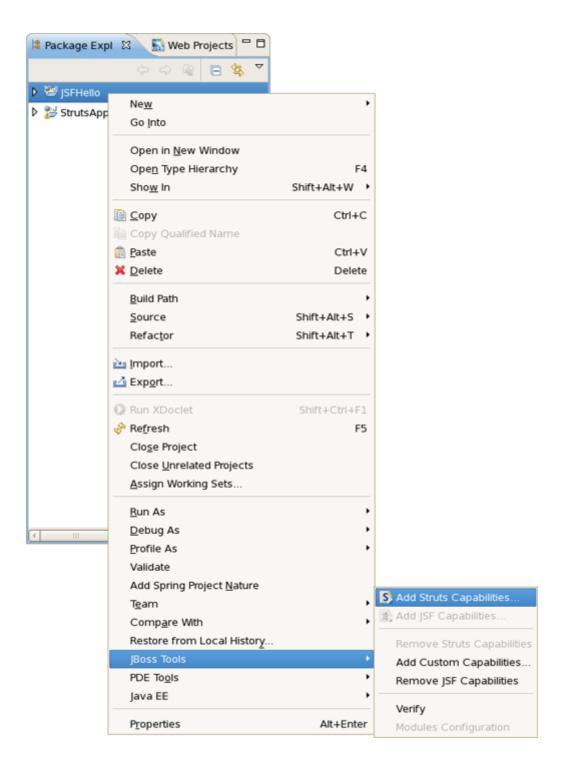


Figure 2.7. Adding Struts Capabilities

In the wizard you should point to location of your deployment descriptor file web.xml and name of the project.

Adding Struts Capability to an Existing Web

Application

9	Import Struts Project	×
Project Location Please select web.xr	ml location	0
web.xml Location*	/opt/work/jbds_GA/workspace/JSFHello/WebContent/WEB-INF/web.xml	<u>C</u> hange
Project Name*	JSFHello	
0	Help < Back Next > Bnish	Cancel

Figure 2.8. Choosing Project Location

After hitting *Next,* you will see the following screen. This screen simply means that you need to add at least one Struts module to your project to make this project a Struts project. Adding a Struts module means that a new struts-config.xml will be added to your project and registered in the web.xml file. In addition, all required Struts libraries will be added. To add a Struts module, select the *Add Struts Support* button.

Import Struts Project Import Struts Project Project Modules Import Struts module to be imported		
Name (
JRI (
Path on Disk		<u>C</u> hange
Sources Path		<u>C</u> hange
Module Root (<u>C</u> hange
(Add Struts Support	
0	Help < Back Next > Enish	Cancel

Figure 2.9. Project Modules

Here you can select what Struts Version, Servlet Class, URL Pattern and TLDs to add to this project.

🥹 Add Struts Support 🗙			
Struts Project Please select stru	uts support options		
Version*	1.2		
Servlet Class:*	org.apache.struts.action.ActionServlet		
URL Pattern:*	*.do		
TLD Files:*	 struts-nested.tld fmt.tld sql.tld c.tld x.tld struts-html.tld struts-bean.tld struts-logic.tld struts-tiles.tld 		
0	<u>Finish</u> Cancel		

Figure 2.10. Selecting Struts Support Options

When done, you will see the default Struts module configuration information. See how to Edit *Struts modules*.

9	Import Struts Project	
Project Mod	ules	
Configure Proj	ject Modules	
Name	URI	
<default></default>	/WEB-INF/struts-config.xml	
Name	<default></default>	
JRI	/WEB-INF/struts-config.xml	
Path on Disk	pt/work/jbds_GA/workspace/JSFHello/WebContent/WEB-INF/struts-config.xml	<u>C</u> hange
Sources Path	/opt/work/jbds_GA/workspace/JSFHello/JavaSource	<u>C</u> hange
Web Root	/opt/work/jbds_GA/workspace/JSFHello/WebContent	<u>C</u> hange
0	Help < Back Next > Binish	Cancel

Figure 2.11. Project Configuration Information

On the last screen you can set the different folders for your project as well as register this application with a servlet container. If you want the libraries (.jar files) will be automatically added to your project, click on the checkbox *Add Libraries*.

Adding Struts Capability to an Existing Web

Application

9	Import Struts Project
Project Folders Select Project Fol	
Classes Folder Lib Folder Ant Build File	/opt/work/jbds_GA/workspace/JSFHello/WebContent/WEB-INF/classes C_hange /opt/work/jbds_GA/workspace/JSFHello/WebContent/WEB-INF/lib C_hange C_hange
Environment Servlet Version:	Add Libraries Struts 1.2 2.4
Context Path* Runtime:*	JSFHello JBoss 4.2 Runtime New
Target Server:	Choice list is empty. New Select All Deselect All
0	Help < Back Next > Finish Cancel

Figure 2.12. Registering the Project at Server

When done, you can open end edit the struts-config.xml file using useful Struts configuration file editor provided by JBDS. (The Struts configuration is shown below in the Tree viewer).

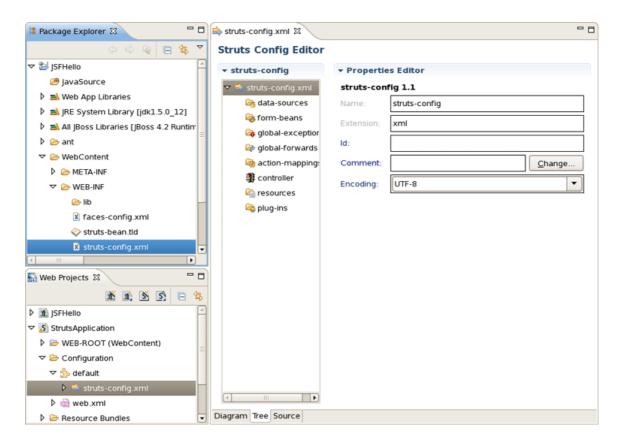


Figure 2.13. Struts-config.xml File

Editors

In this chapter we'll introduce you to featured graphical editors for specific Struts files such as Struts Configuration files, Tiles files and Struts Validation files.

3.1. Graphical Editor for Struts Configuration Files

First, let's dwell on the Struts Configuration file editor.

This editor has three views with different representation of *struts-config.xml:* Diagram, Tree and Source. The views can be selected via the tabs at the bottom of the editor. Any changes made in one view are immediately visible when you switch to any other view.

Now, we'll consider every view in more detail.

3.1.1. Diagram View

The Diagram view graphically displays the Web flow of the application defined in the Struts configuration file.

🗟 struts-config.:	xml 🕄		- 8
Image: state	ime		
🍝	/pages/inp	utname.jsp	
*	*****		
		/greeting	
		GetNameForm sayHello	
			/pages/greeting.jsp ≫∰
Diagram Tree S	Course		

Figure 3.1. Diagram View

The Diagram view allows to edit navigation in your Struts application. Just by right-clicking anywhere on the diagram, you can use a context menu to create the building blocks of a Struts application:

- Actions
- Global forwards
- Global exceptions
- JSP Pages

etName 🧑		
	Add	🔌 \delta Action
	Create Comment	🔊 Global Forward
	💼 Paste Ctrl + V	 Global Exception Page
	Select Element	
	Auto-Layout	
	🥸 Verify	/pages/greeting.jsp
	Properties	> <u>A</u>
	🍧 Generate Java Code	
	Input Methods	•

Figure 3.2. Diagram Context Menu

Along the upper-left side of the editor is a stack of seven icons for changing the behavior of the cursor in the diagram.



Figure 3.3. Editor Icons

The first icon switches to the default regular selection cursor, the second to the marquee selection cursor and the third to the new connection cursor. The last four icons switch the cursor to an insert cursor for each type of Struts build block listed above (and in the order listed).

For instance, clicking on the first of these four icons (the one with the gears) will switch the cursor to insert actions. Clicking anywhere in the diagram with this cursor has the same effect as right-click and selecting *Add* > *Action...* from the context menu with the regular cursor active. It's just more efficient to use this cursor if you're adding more than one action at once.

3.1.2. Tree View

The Tree view represents the different elements of the Struts application that are organized into functional categories on the left-hand side and a form for editing the properties of currently selected items on the right-hand side.

🕏 struts-config.xml 🛙			- 8
Struts Config Editor			
	• Properties Ed	itor	-
マ 📦 struts-config.xml	forward		
🙈 data-sources	ld:		
🗞 form-beans 词 global-exceptions	ClassName:	Browse	
v 🖗 global-forwards	ContextRelative:		
ne 🔗 getName	Module:		
	Name:	sayHello	j
∂ sayHello	Path:	/pages/greeting.js; Change	
Controller	Redirect:		
ଜ୍ଜି resources ଜ୍ୱି plug-ins	Small-Icon:]
	Large-Icon:		
(III)	Display-Name:] .
Diagram Tree Source			

Figure 3.4. Tree View

You can also right-click on any node in the category tree and perform appropriate operations through a context menu. For instance, by right-clicking on the action-mappings category node, you can add new actions to the application.

🕏 struts-config.xml 🛙			- 8
Struts Config Editor			
	+ Propertie	s Editor	
 ✓ i⇒ struts-config.xml ia data-sources ia form-beans ia global-exceptions ia global-forwards ia global-forwards 	action-ma ld: Type: Comment:	ppings	<u>C</u> hange
✓ ★ /greeting ⊘ sayHello	Create Action Sort Paste	Ctrl + V	
🔄 plug-ins	Properties Verify		
Diagram Tree Source			

Figure 3.5. Tree Context Menu

3.1.3. Source View

In the Source view, you have complete editing control of the underlying XML coding.

🔿 struts-config.xml 🕱	- 0
<pre>> struts-config.xml is <?xml version="1.0" encoding="ISO-8859-1"?> <!DOCTYPE struts-config PUBLIC "-//Apache Software Foundation//DTD St</td> <td></td></pre>	
	~
Diagram Tree Source	

Figure 3.6. Source View

When working in Source view, you always have all the following features available:

- Content Assist
- Open On Selection
- File Folding

You can take advantage of *code assist* [../../../jsf/html_single/ index.html#CodeAssistAndDynamicCodeAssist42BasedOnProjectData].

🐟 struts-config.xmi 🕴	
<pre><?xml version="1.0" encoding="ISO-8859-1"?> <!DOCTYPE struts-config PUBLIC "-//Apache Software "http://struts.apa</pre> </pre>	e Foundation//DTD St che.org/dtds/struts-
<pre><struts-config> <data-sources></data-sources></struts-config></pre>	
action-mappings	Element : display-name
<> controller	The "display-name" element contains a short (one line) description of the surrounding element, suitable for use in GUI
<> data-sources	tools.
<> description	Data Type : #PCDATA
«» display-name	=
<> form-beans	
<> global-exceptions	
<> global-forwards	
<> message-resources	
<> plug-in	
# comment - xml comment	_
	<u>v</u>
Diagram Tree Source	
Diagrann nee Source	

Figure 3.7. Code Assist

The editor will also immediately flag any errors.

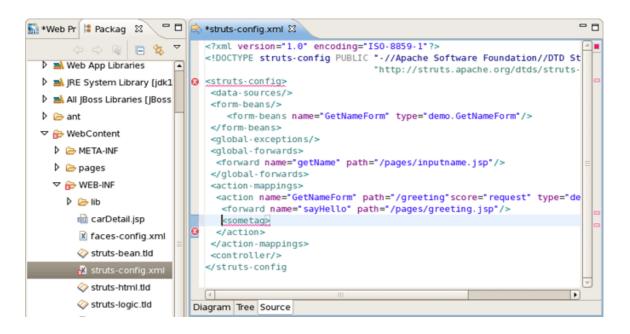


Figure 3.8. Errors in Source View

Finally, you can use the Outline view with the editor to easily navigate through the file.

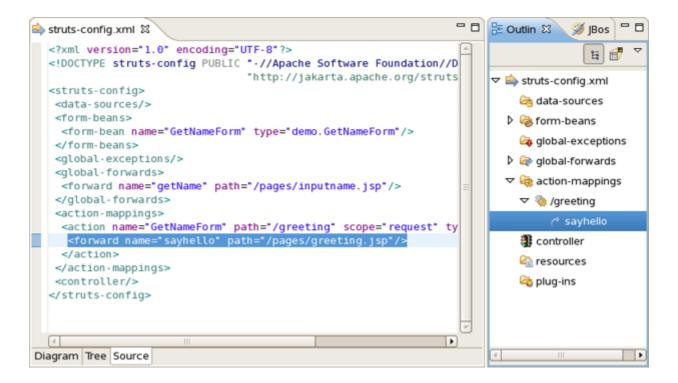


Figure 3.9. Outline View

Find more information about editor features *here* [../../../jsf/html_single/ index.html#editors_features].

3.2. Graphical Editor for Tiles Files

Here, you'll know how to make use of the special graphical editor for Tiles configuration files.

The editor has three main views: Tree, Diagram and Source. The views can be selected via the tabs at the bottom of the editor. Any changes made in one view are immediately visible when you switch to any other view.

Before we consider each view of the editor, let's look at the way of creating new Tiles files.

3.2.1. Create New Tiles File

To create new Tiles files, right click any folder and select New > Tiles File.

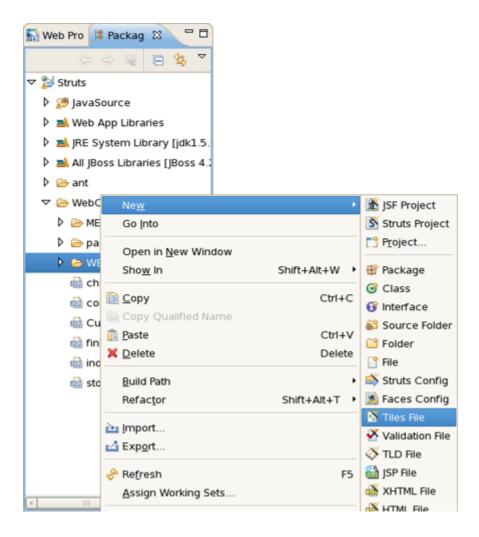


Figure 3.10. Creating a New Tiles File

3.2.2. Tree View

The Tree view represents the different elements of the Tiles file that are organized into functional categories on the left-hand side and a form for editing the properties of currently selected items on the right-hand side.

tiles-defs	 Tiles Conf 	ig Description		
🔨 📓 tiles-defs.xml	Name:	tiles-defs		
	Encoding:			-
action	- Definition	s		
🖺 tiles.head	name	extends	path	<u>A</u> dd
🔚 tiles.action	tiles.layout		tiles/layout.jsp	Remove
🔚 tiles.foot	tiles.head		tiles/head.jsp	
🔚 tiles.error	tiles.action		tiles/action.jsp	Edit
🖺 tiles.layout.errors	tiles.foot		tiles/foot.jsp	<u>Ц</u> р
	tiles.error		tiles/error.jsp	Down
	tiles.layout.e	error tiles.layout		Down

Figure 3.11. Tree View

To edit the file, simply right click any node and select among the available actions.

🕒 tiles-defs.xml 🕴				- 0
Tiles Editor				
▼ tiles-defs		• Basic		A
⊽ 🗟 tiles-defs.xml		Name:	tiles.layout	
··· ▼ 🔚 tiles.layout	🖹 Add Put			•
 action 	Add Put	List	tiles/layout.jsp	Change
🔚 tiles.head	Rename	e		Browse
tiles.action	📄 Сору	Ctrl + C		<u>C</u> hange
🔚 tiles.foot 🔚 tiles.error	💼 Paste	Ctrl + V		
🔚 tiles.layout.	💢 Delete	Delete		
	Properti	es		
		Description:		<u>C</u> hange
		Role:		•
4	Þ	Small-Icon:		
Tree Diagram Source				

Figure 3.12. Editing in Tiles Editor

3.2.3. Diagram View

The Diagram view allows you to create complex Tiles files in the form of a diagram.

🖪 til	les-defs.xml 🕱	- 8
	tiles.layout	
	tiles.error	
	tiles.foot	
	tiles.action	
	tiles.head	
Tree	Diagram Source	

Figure 3.13. Diagram Mode

To create new definitions, simply right click anywhere in the diagram.

🔚 tiles-d	lefs.xml 🕄		- 8
	tiles.layout	tiles.layout.errors	
	tiles.error		
	tiles.foot	New Definition	
	1	o∱ Cut Ctrl + X	
	tiles.action	Copy Ctrl + C	
		Paste Ctrl + V	
	tiles, head	X Delete Delete	
		Preferences	
		Input Methods	
Tree Dia	agram Source		

Figure 3.14. Creating New Definition

You can also use the Diagram toolbar to make editing easier.



Figure 3.15. Diagram Toolbar

It contains four icons for changing the cursor state. The first one is the default cursor state for selecting existing nodes. The second icon is marquee selector. The third is used for creating new connections and the last one is for adding definition template to the content.

3.2.4. Source

The other view of the Tiles editor is the Source view that gives you full control over the source. Any changes here will immediately appear in other modes when you switch to them.

When working in Source view, you always have all following features available:

- Content Assist
- Open On Selection

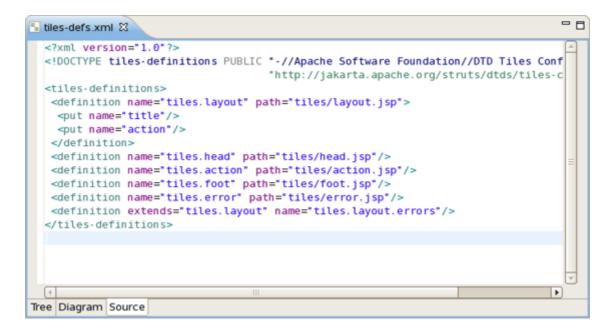


Figure 3.16. Source View

Code assist [../../../jsf/html_single/ index.html#CodeAssistAndDynamicCodeAssist42BasedOnProjectData] is available in the Source mode.

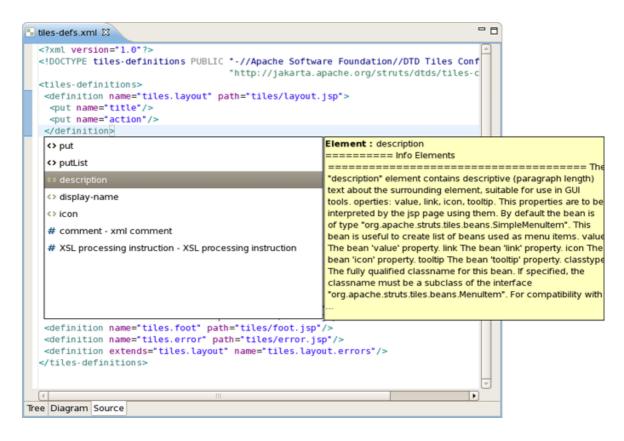


Figure 3.17. Code Assist

Any errors are immediately reported as shown below:

😫 Packag 😫 🔝 Web Pro 📟	🗖 🖫 tiles-defs.xml 🕱	- 6
수 수 @ 🖻 🕸	<pre></pre>	nf A
VEB-INF	<pre></pre>	
▷ 🗁 lib 📾 carDetail.jsp	<pre><definition name="tiles.layout" path="tiles/layout.jsp"> <put name="tile"></put></definition></pre>	
🗴 faces-config.xml	<pre><put name="action"></put> </pre>	
Struts-bean.tid	<pre><sometad> <definition name="tiles.head" path="tiles/head.jsp"></definition></sometad></pre>	c
struts-html.tld	<pre><definition name="tiles.action" path="tiles/action.jsp"></definition> <definition name="tiles.foot" path="tiles/foot.jsp"></definition></pre>	
🐼 struts-logic.tld 😿 tiles-defs.xml	<pre><definition name="tiles.error" path="tiles/error.jsp"></definition> <definition extends="tiles.layout" name="tiles.layout.errors"></definition></pre>	
🔬 ules-ders.xmi	<pre></pre>	=

Figure 3.18. Errors Reporting

You can also use the Outline view together with the editor's Source mode. It provides an easier navigation through the file.



Figure 3.19. Outline View

3.3. Graphical Editor for Struts Validation Files

Providing full support for development Struts applications JBoss Tools comes with a visual validation editor. To open the editor double-click on the validation file or if you don't have it create a new one.

To create a new validation file, right click any folder in Project Explorer and select *File > New > Other...* from the context menu and then *JBoss Tools Web > Struts > Validation File.*

🥹 New	×
Select a wizard	
<u>W</u> izards:	
type filter text	
	•
HTML File	
🖄 JS File	
jsp File	
📩 Properties File	
💸 TLD File	
💾 Web Descriptor	
🚵 XHTML File	
ISF	
🔊 Struts Config	
Struts Project	
🖹 Tiles File	
🛛 Validation File	
D 🗁 JPA	•
⑦ < <u>Back</u> Next > Einish	Cancel

Figure 3.20. Creating New Validation File

The validation editor works with five modes: Formsets, Validators, Constants and standard Tree and Source that you can easily switch over using tabs at the bottom of the editor.

The Formsets view shows forms and their elements on the left side and the dialogue for defining their validation rules on the right side.

MyValidation.xml 🛙				- 0
Formsets { 1	Page Indexed List Prope	1		Edit
✓ [™] formset (default) [™] Constants	Msg - Corresponded Message Template			Add
 AlertWizard ashboardManagerForm 		1		Edit
♥ Ø dashboardVeiwForm ♥ ● name	Arg - Replacemer	nt Value for Message T	Template	Delete
19 required 19 mask	name required	arg key arg0 Nmae	false	Add
👂 🥔 dashboardWizardNew	[4]	III	L	Delete
	Var - Validator Parameter			
	war-name mask	^[()A-Za-z0-9()_]+	-[A-Za-z0-9']	Add Edit
				Delete
Formsets Validators Constants				

Figure 3.21. Formsets View

The Constants view let you set constant values for your validation rules.

🗹 *validation.xml 🛙		- 8
Current Global Section glob	a 🗢 🛛 🖺 👔	
constant-name	constant-value	∆dd
standartName	^[()A-Za-z0-9()_]+[A-Za-z0-9']	Edit
		Delete
Formsets Validators Constan	ts Tree Source	

Figure 3.22. Constansts View

The validation file can also be viewed in a Tree view.

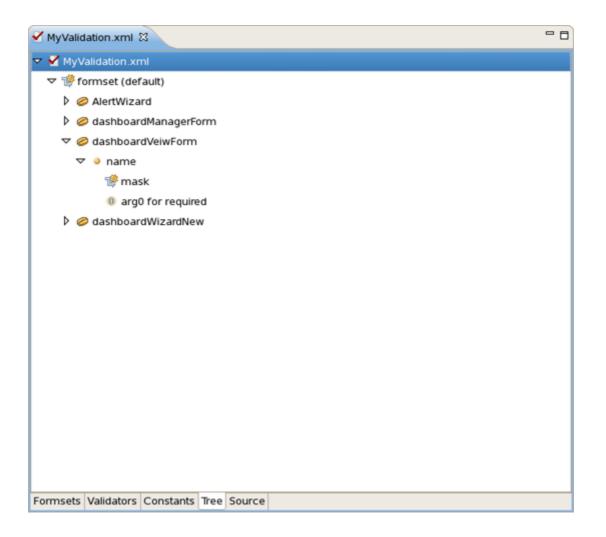


Figure 3.23. Tree View

At any point you have full control over the source by switching to the Source view. Any editing in this view will immediately be available in other views of the editor.

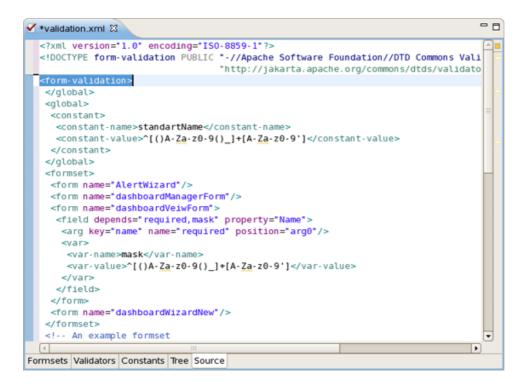


Figure 3.24. Source View

You can also open your own custom or Struts-standard validation-rules.xml file.

The Validators view shows the validation rules for a selected validator. You can of course add your own rules.

✔ MyValidation.xml 🛿		- 8
Current Global Section globa 🗢	IN 🗊	
Validators	Depends	Change
name	Message Key errors.timeornumber	Change
long	Java Class Name com.echopass.provisioning.rra.validator.TimeOrNumbe	Change
float double	Method validateTimeOrNumber	Change
date	Method Param java.lang.Object, org.apache.commons.v	Change
intRange	JavaScript	
creditCard	Function Name	Change
email	Function Body	
url time_number time_numberforthresholds	<pre>var timeMask = *^([0-9]){1,3}(:[0-5][0-9]){0,2}\$"; var numberMask = *^[0-9]+.?[0-9]?\$"; var booleanMask = *^active inactive\$"; var anyMask = *^^*\$"; var percentMask = *^[0-9]+.?[0-9]?%?\$";;</pre>	=
	var statistic = new Array();	•
Formsets Validators Constants Tr	ee Source	

Figure 3.25. Validators View

Here are the validation rules shown in the Source mode.

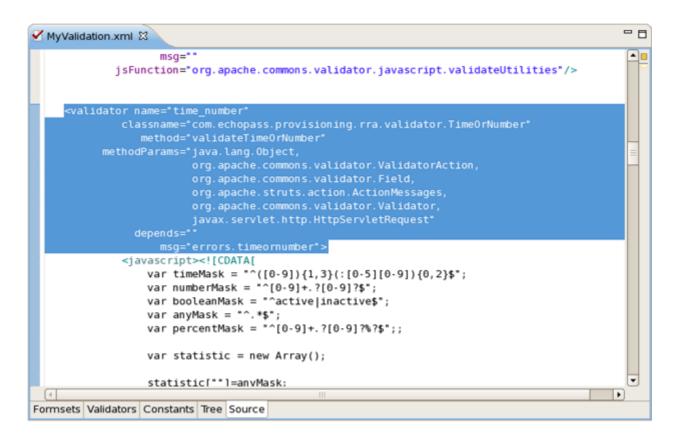


Figure 3.26. Validation Rules

Modules

JBoss Tools support working with Struts projects that have multiple modules. You can easily do the following:

- Add new modules
- Edit modules for an existing project or during Struts project import

Now, let's discuss this functionality in more detail.

4.1. When Importing a Struts Project

During Struts project import, if the project has multiple modules, you will see a screen with all existing modules. You can select each module and edit its details.

9	Import Struts Project	×
Project Modu Configure Proje		
Name <default></default>	URI /WEB-INF/struts-config.xml	
Name URI	<default> /WEB-INF/struts-config.xml</default>	
Path on Disk	/opt/work/jbds_GA/workspace/Struts/WebContent/WEB-INF/struts-config.xml	<u>C</u> hange
Sources Path Web Root	/opt/work/jbds_GA/workspace/Struts/JavaSource /opt/work/jbds_GA/workspace/Struts/WebContent	<u>C</u> hange
		<u>s</u> nange
0	< <u>B</u> ack <u>N</u> ext > <u>F</u> inish	Cancel

Figure 4.1. Configuring Project Modules

4.2. Editing Modules in an Existing Project

To edit modules in an existing project, right click the project and select *JBoss Tools > Modules Configuration.*

Validate		
Add Spring Project Nature		
T <u>e</u> am	•	
Comp <u>a</u> re With	•	
Restore from Local History		
JBoss Tools		S Add Struts Capabilities
PDE Tools	•	1 Add JSF Capabilities
Java EE	•	Remove Struts Capabilities
Properties	Alt+Enter	Add Custom Capabilities
		Remove JSF Capabilities
		Verify
		Modules Configuration

Figure 4.2. Choosing Modules Configuration

You will see the same screen as above where you will be able to select a module and edit its details.

۲	Modules Configuration		×
Struts Projec	t		
Name	URI	Deleted	Add
<default></default>	/WEB-INF/struts-config.xml		Delete
Name	<default></default>		
URI	/WEB-INF/struts-config.xml		
Path on Disk	A/workspace/Struts/WebContent/WEB-INF/struts-co	onfig.xml	<u>C</u> hange
Sources Path	/opt/work/jbds_GA/workspace/Struts/JavaSource		<u>C</u> hange
Web Root	/opt/work/jbds_GA/workspace/Struts/WebContent		<u>C</u> hange
		Finish	Cancel

Figure 4.3. Modules Configuration

4.3. Adding New Modules

Adding a new module is very simple. First switch to Web Project view. Expand your project to the Configuration folder. Under that folder you should see the current modules. Right click on Configuration and select *New* > *Struts Config.*

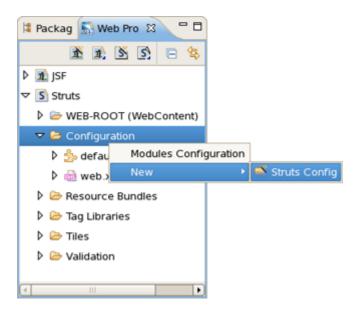


Figure 4.4. Adding New Modules

You will see the screen below. You can specify a new module name and also add the new Struts configuration file to web.xml file.

۲	Struts Config 🗙
Struts Co	onfig 🛞
Folder:*	/Struts/WebContent/WEB-INF Browse
Name:*	struts-config-mod1
Version:	1.1 🔷
Module:	/mod1
	✓ Register in web.xml
	Finish Cancel

Figure 4.5. Adding New Modules

Code Generation

JBoss Tools comes with a code generation feature. You can generate stub code for Struts Actions, FormBeans, Forwards and Exceptions.

The code generation that JBoss tooling provides is based on Velocity templates which can be modified for your use. The templates are located at {*JBossStudioHome*} > templates > codegeneration.

There are a number of ways to invoke code generation. One is simply right-clicking the Struts diagram and selecting *Generate Java Code....*

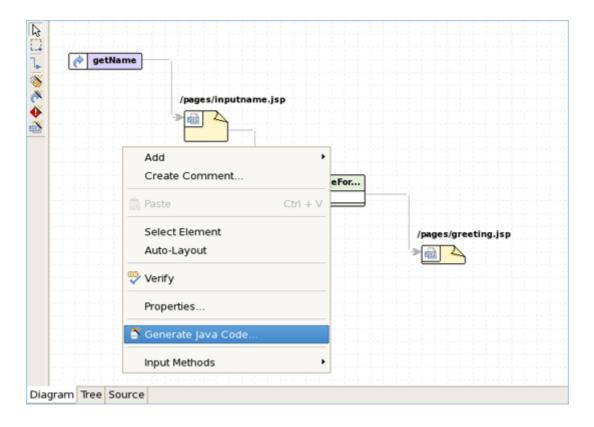
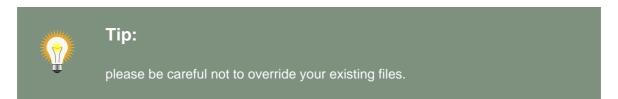


Figure 5.1. Selecting Generate Java Code

On this screen you can select for which elements to generate code. If you select Next you will be able to specify more options for each of the categories you selected.

9	Generate - Step 1
Java Code Ste	p 1
	Generate classes for Actions
	Generate classes for FormBeans
	Generate classes for Forwards
	Generate classes for Exceptions
	Overwrite existing files
Base Package:	
	Next >> Generate Cancel

Figure 5.2. Generate - Step 1



When generation is complete, a result window will appear letting you know how many classes were generated:

9	Generate - Finish	×
Java Code Step 7 Generation finished.		I
Message:		
Generated classes: 1 Form beans: 1		
4	III	>
		Finish

Figure 5.3. Generation Finished

You don't always have to generate code for all elements at once. You can invoke generation for just an individual Struts artifact as well. Right-click an element on the diagram of the Struts configuration file and select *Generate Java Code...* from the context menu.

GetNam	eFor
sayhello	Open Declaration
	Open Form-bean Source
	Oreate Exception
	💑 Create Forward
	📸 Create Property
	Create Comment
	Set as unknown
titt	Select Referring Item
	🍧 Generate Java Code

Figure 5.4. Generation For Individual Struts Artifact

🕏 struts-config.xml 😫		- 0
Struts Config Editor		
	• Propertie	s Editor
🔻 🧆 struts-config.xml	struts-con	fig 1.1
🛵 data 🛛 Rename		struts-config
👂 🧞 form 🛛 Add	• on:	xml
🔯 glot	va Code	
		Change
P acti Properties Controller		Change
a resources	Encoding:	UTF-8
👂 🖄 plug-ins		
Diagram Tree Source		

The same can be done from within the Tree viewer for the editor of the Struts configuration file.

Figure 5.5. Generation in Struts Config Editor

Struts Configuration File Debugger

JBoss Tools come with Struts configuration file debugger. It allows you to set break points on Struts diagram and then simply launch the server in debug mode.

🗟 struts-config.xml 🛙			- 0
G getName	/pages/inputname.jsp		
G G G G G G G G G G G G G G S S S S S S	Copen Page		
	Create Link Create Commen Show/Hide Links Select Referring		
	Run on Server		
	Copy Cut Paste	Ctrl + C Ctrl + X Ctrl + V	/pages/greeting.jsp ≫∰
	🗙 Delete	Delete	
	Add Breakpoint		
	Input Methods	•	
Diagram Tree Source			

Simply right click an Action or a page and select Add Breakpoint.

Figure 6.1. Adding Breakpoint

Customizable Page Links Recognizer

Custom page links allow you to define custom Struts page links that will be recognizable in the Struts application diagram. You can define these links by selecting *Window > Preferences* from the menu bar and then selecting *JBoss Tools > Web > Struts > Customization* from the Preferences dialog box.

•		Prefe	rences			
type filter text		Customizatio	n			⇔ • ⇔-
General	<u>^</u>	Link Recognize	er			
Ant		Tag	Attribute	Refer to	Link Type	Add
Connectivity		html:link	action	action	Struts	
FreeMarker Editor		html:link	page	page	Struts	Edit
Help		html:link	forward	forward	Struts	Delete
HQL editor		html:frame	action	action	Struts	
Install/Update		html:frame	page	page	Struts	
Internet		html:frame	forward	forward	Struts	
Þ Java	=	html:form	action	action	Struts	
JBoss jBPM		logic:forward		forward	Struts	
✓ JBoss Tools		logic:redirect		forward	Struts	
JBoss Servers		logic:redirect	Torward	IOIWalu	Suuts	
Packaging Archives						
▽ Web						
Editors						
▷ JSF						
Seam						
Automation						
Customization						
Project						
Struts Pages						
Verification						
XDoclet	•	4				
	-			Rest	ore <u>D</u> efaults	Apply
0					ок	Cancel

Figure 7.1. Customization Panel

Struts Project Verification

In this section we'll consider one more functionality that JBoss Tools provide for Struts projects, namely adjusting projects verification.

To configure Struts project verification select *Window > Preferences* from the menu bar, select *JBoss Tools > Web > Verification* from the Preferences dialog box and then expand the Struts Rules node.

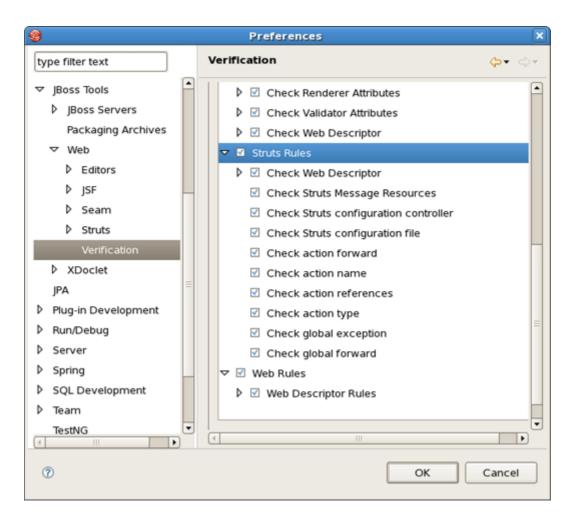


Figure 8.1. Struts Rules

Suppose you are working in the Source viewer for a Struts configuration file as shown below:



Figure 8.2. Struts Configuration File

While typing a class name or entering it from the graphical editor, you might make a minor typo (like *"sample.GreetingAction1"* instead of *"sample.GreetingAction"*). After saving the file, verification checks to make sure everything is correct and finds the error below:

▷ 🧀 META-INF ▷ 🗁 pages ▽ 🔂 WEB-INF	<pre>tName" path="/pages/inputname.jsp"/></pre>	
VEB-INI	NameForm path="/greeting scope="request" type="sample.GreetingAction1"> ayHello" path="/pages/greeting.jsp"/>	-
🗇 struts-bean.tid	aynetto path- /pages/greetxing.jsp //	
🛃 struts-config.xml		
🗇 struts-html.tid	<pre>="org.apache.struts.tiles.TilesPlugin"> perty="definitions-config" value="/WEB-INF/tiles1.xml,/WEB-INF/tiles-examples-defs.xml"/></pre>	

Figure 8.3. Error Reporting

Notice that the Package Explorer View shows a marked folder and a marked file where the error is.

You can place the cursor over the line with the error to view a detailed error message:



Figure 8.4. Error Message

The verification also checks to make sure you have specified the correct JSP page for the forward:



Figure 8.5. JSP Page Verification

Once you place the cursor over the line, you can see the error message:

	<pre></pre>
--	-------------

Figure 8.6. Error Message

You can always invoke the verification by switching to the Diagram viewer, right-clicking and selecting *Verify* from the context menu:

🕏 *struts-config.xml 🛿		- 0
↓ ↓ ⊘ getName ⊗	/pages/inputname.jsp	
	Add Create Comment Paste Ctrl + V	ages/greeting.jsp
	Select Element Auto-Layout	
	🤴 Verify	
	Properties	
	ᄎ Generate Java Code	
Diagram Tree Source	Input Methods	

Figure 8.7. Verify Command

Relevant Resources Links

Find out necessary information on *Struts technology* [http://struts.apache.org/] if you don't know enough.