Spring Security UI Plugin Reference Documentation



Spring Security UI Plugin - Reference Documentation

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Chapter 1. Introduction to the Spring Security UI Plugin

The Spring Security UI plugin provides CRUD screens and other user management workflows. Nondefault functionality is available only if the feature is available; this includes the ACL controllers and views which are enabled if the ACL plugin is installed, Requestmaps support which is available if grails.plugin.springsecurity.securityConfigType is set to "Requestmap" or SecurityConfigType.Requestmap in application.groovy, and persistent cookies support which is enabled if it has been configured with the s2-create-persistent-token script.

To support both Grails 3.0.x and 3.1.x applications, the plugin depends on version 5.0.x of the hibernate4 plugin and the grails-data-mapping libraries. Because of the way that dependency resolution works across Grails versions, you must add explicit dependencies for the hibernate4 plugin and the GORM libraries to ensure that everything is in sync. As of this writing the current release version of the hibernate4 plugin is '5.0.4' and '5.0.4.RELEASE' for the grails-data-mapping libraries. In addition to adding a dependency for this plugin, add these to the dependencies block of your build.gradle:

compile 'org.grails.plugins:hibernate4:5.0.4'

```
0
```

```
compile 'org.grails:grails-datastore-core:5.0.4.RELEASE'
compile 'org.grails:grails-datastore-gorm-support:5.0.4.RELEASE'
compile 'org.grails:grails-datastore-gorm:5.0.4.RELEASE'
compile 'org.grails:grails-datastore-simple:5.0.4.RELEASE'
compile 'org.grails:grails-datastore-gorm-hibernate4:5.0.4.RELEASE'
compile 'org.grails:grails-datastore-gorm-hibernate-
core:5.0.4.RELEASE'
```

If you use MongoDB or another NoSQL datastore other than Hibernate, retain the supporting dependencies but update the datastore-specific dependencies as necessary.

Also be sure to update the versions when new releases are available.

1.1. Release History

- April 15, 2016
 - 3.0.0.M2 release
- December 21, 2015
 - 3.0.0.M1 release
- December 21, 2015
 - 1.0-RC3 release

- May 20, 2014
 - 1.0-RC2 release
- November 11, 2013
 - 1.0-RC1 release
 - JIRA Issues
- February 12, 2012
 - 0.2 release
 - JIRA Issues
- September 14, 2010
 - 0.1.2 release
 - JIRA Issues
- July 27, 2010
 - 0.1.1 release
- July 26, 2010
 - initial 0.1 release

Chapter 2. User Management

2.1. User search

The default action for the User controller is search. By default only the standard fields (username, enabled, accountExpired, accountLocked, and passwordExpired) are available but this is customizable with the s2ui-override script - see the Customization section for details.

You can search by any combination of fields, and the username field has an Ajax autocomplete to assist in finding instances. In this screenshot you can see that an email field has been added to the domain class and UI. Leave all fields empty and all checkboxes set at "Either" to return all instances.

		Sprin	g Security Ma	anagement Console	Logged in as admin (Logout)
			User S	earch	
Username:					
Email:					
	True	False	Either		
Enabled:					
Account Expired:					
Account Locked:					
Password Expired:					
Search					

This example shows a search for usernames containing 'adm' (the search is case-insensitive and the search string can appear anywhere in the username). Results are shown paginated in groups of 10. All of the column headers are clickable and will sort the results by that field.

Spring Security Management Console

Logged in as admin (Logout)



1 2 3 4 5 6 7 8 9 10 Next

Showing 1 through 10 out of 100.

2.2. User edit

After clicking through to the 'admin' User you get to the edit page (there are no view pages):

dit User	Spring Security Management Console	Logged in as admin (Logout
🕭 User Details 🛛 🔂 Ro	les	
Username	admin	
Email	admin@foo.com	
Password	••••••	
Enabled		
Account Expired		
Account Locked		
Password Expired		
		4

You can update any of the attributes or delete the User. You can see that there's a "Login as user" button here - that is only shown if you're authenticated with a User who is granted ROLE_SWITCH_USER (this role name can be configured in application.groovy):

This allows you to temporarily assume the identity of another User (see the Spring Security Core plugin documentation for more information about switch-user). The "Logged in as ..." information in the top right of the screen will change to show that you're running as another User and provide a link to switch back. The role name ROLE_SWITCH_USER is the default but you can change the value with the grails.plugin.springsecurity.ui.switchUserRoleName setting in application.groovy.

If you click the Roles tab you can see the roles granted to this User and can click through to its edit page:

Edit User	Spring Security Management Console	Logged in as admin (Logout)
🚨 User Details 🔂 Roles		
 ☑ ROLE_ADMIN ☑ ROLE_SWITCH_USER ☑ ROLE_USER 		
Update Delete		

2.3. User creation

You can create new Users by going to /user/create or by clicking the Create action in the Users menu.

Users Roles Registration Code S	ecurity Info	
	Spring Security Management Conso	Logged in as admin (Logout)
Create User		
Username		
Email		
Password		
Enabled		
Account Expired		
Account Locked 📃		
Password Expired 📃		
		di .
Create		
onodeo		

Chapter 3. Role Management

3.1. Role search

The default action for the Role controller is search. By default only the authority field is available but this is customizable with the s2ui-override script - see the Customization section for details.

The authority field has an Ajax autocomplete to assist in finding instances. Leave the field empty to return all instances.

	Spring Security Management Console	Logged in as admin (Logout)
	Role Search	
Authority:		
Search		

Search is case-insensitive and the search string can appear anywhere in the name (and you can omit the ROLE_ prefix). Results are shown paginated in groups of 10 but if there's only one result you'll be forwarded to the edit page for that Role. The authority column header is clickable and will sort the results by that field.

3.2. Role edit

After clicking through to a Role you get to the edit page (there are no view pages):

Users Roles Registration Code Security Info		
	Spring Security Management Console	Logged in as admin (Logout)
Edit Role		
🗟 Role Details 🏼 🔗 Users		
Authority ROLE_ADMIN		
Update Delete		

You can update any of the attributes or delete the Role. Any user that had been granted the Role will lose the grant but otherwise be unaffected.

If you click the Users tab you can see which users have a grant for this Role and can click through to

their edit page:

Spring Security Management Console

Logged in as admin (Logout)

Edit Role

🔁 Role Details 🏼 🍰 Users	
admin	
Update Delete	

3.3. Role creation

You can create new Roles by going to /role/create or by clicking the Create action in the Roles menu.

	Spring Security Management Console	Logged in as admin (Logout)
	Create Role	
Authority		
Create		

Chapter 4. Requestmap Management

The default approach to securing URLs is with annotations, so the Requestmaps menu is only shown if grails.plugin.springsecurity.securityConfigType has the value "Requestmap" or SecurityConfigType.Requestmap in application.groovy.

4.1. Requestmap search

The default action for the Requestmap controller is search. By default only the standard fields (url and configAttribute) are available but this is customizable with the s2ui-override script - see the Customization section for details.

You can search by any combination of fields, and the url and configAttribute fields have an Ajax autocomplete to assist in finding instances. Leave both fields empty to return all instances.

	Spring Security Management Consol	e Logged in as admin (Logout)
	Requestmap Search	
URL:		
Config Attribute:		
Search		

Searching is case-insensitive and the search string can appear anywhere in the field. Results are shown paginated in groups of 10 and you can click on either header to sort by that field:

	Spring Security Manageme	ent Console	Logged in as admin (Logout)
	Requestmap Search		
URL:			
Config Attribute:			
Search			
URL	Config Attribute		
/j_spring_security_switch_user	ROLE_SWITCH_USER, IS_AUTHENTICATED_FULLY		
/secure/**	ROLE_ADMIN		

Showing 1 through 2 out of 2.

4.2. Requestmap edit

After clicking through to a Requestmap you get to the edit page (there are no view pages):

		Spring Security Ma	nagement Console	Logged in as admin (Logout)
		Edit Requ	estmap	
URL	/j_spring_security_switch	_user		
Config Attribute	ROLE_SWITCH_USER, IS_	AUTHENTICATED_FULLY		
Update	elete			

You can update any of the attributes or delete the Requestmap. Editing or deleting a Requestmap resets the cache of loaded instances, so your changes will take effect immediately.

4.3. Requestmap creation

You can create new Requestmaps by going to /requestmap/create or by clicking the Create action in the Requestmaps menu.

	Spring Security Man	agement Console	Logged in as admin (Logout)
	Create Requ	estmap	
URL)	
Config Attribute			
Create			
	 		Å

Creating a Requestmap resets the cache of loaded instances, so your changes will take effect immediately.

Chapter 5. User Registration

Most of the plugin's controllers are intended to be part of a backend admin application, but the Registration and Forgot Password workflows are expected to be user-facing. So they're not available in the admin menu like the User, Role, and other backend functionality - you'll need to expose them to your users.

One way to do this is to replace the default login.gsp that's provided by the Spring Security Core plugin with this plugin's version. You can do this by running grails s2ui-override auth - s2ui-override script - see the Customization section for details. If you do this your users will have links to both workflows from the login screen:

Username:	
Password:	
🗹 Remember me Forgot	password?

5.1. Registration

Navigate to /register/:

	Create Account
Username	
E-mail Password	
Password (again)	
	Create your account

After filling out valid values an email will be sent and you'll see a success screen:

Create Account	
Your account registration email was sent - check your mail!	

Click on the link in the email:

<u>« Back to Inbox</u>	Archive	Report spam	Delete	Move to 🔻	Labels v	More a	ctions ▼	
New Account Inbox X								
	@gmai	l.com	show o	<u>letails</u> 10:18	PM (1 minut	e ago)	Keply	
Hi testuser,								
You (or some	ne preten	ding to be you)	created a	in account w	ith this email	addres	s.	
If you made the	e request,	please click <u>he</u>	<u>ere</u> to finis	h the registra	ation.			
	orward							
I								

and you'll finalize the process, which involves enabling the locked user and pre-authenticating, then redirecting to the configured destination:





5.2. Configuration

The post-registration destination url is configurable in grails-app/conf/application.groovy using the postRegisterUrl attribute:

If you don't specify a value then the grails.plugin.springsecurity.successHandler.defaultTargetUrl value will be used, which is '/' by default.

You can customize the subject, body, and from address of the registration email by overriding the default values in grails-app/conf/application.groovy, for example:

```
grails.plugin.springsecurity.ui.register.emailBody = '...'
grails.plugin.springsecurity.ui.register.emailFrom = '...'
grails.plugin.springsecurity.ui.register.emailSubject = '...'
```

The emailBody property should be a GString and will have the User domain class instance in scope in the user variable, and the generated url to click to finalize the signup in the url variable.

In addition, each new user will be granted ROLE_USER after finalizing the registration. If you want to change the default role, add more, or grant no roles at all (for example if you want an admin to approve new users and explicitly enable new users) then you can customize that with the defaultRoleNames attribute (which is a List of Strings):

grails.plugin.springsecurity.ui.register.defaultRoleNames = [] // no roles

or

```
grails.plugin.springsecurity.ui.register.defaultRoleNames = ['ROLE_CUSTOMER']
```

5.3. Mail configuration

By default the plugin uses the Mail plugin to send emails, but only if it installed. This is configurable by registering your own MailStrategy implementation - see [the section on configuration|guide:customization] for more information. The plugin assumes that the Mail plugin and an SMTP server are already configured.

5.4. Notes

You should consider the registration code as starter code - every signup workflow will be different, and this should help you get going but is unlikely to be sufficient. You may wish to collect more information than just username and email - first and last name for example. Run grails s2ui-override register to copy the registration controller and GSPs into your application to be customized.

If there are unexpected validation errors during registration (which can happen when there is a disconnect between the domain classes and the code in RegisterController they will be logged at the warn or error level, so enable logging to ensure that you see the messages, e.g.





RegisterController and its GSPs assume that your User domain class has an email field. Be sure to either rework the workflow (using the s2ui-override script) if you don't need an email confirmation step or add an email field.

5.5. RegistrationCode search

The plugin uses its grails.plugin.springsecurity.ui.RegistrationCode domain class to store a token associated with the new users' username for use when finishing the registration process after the user clicks the link in the generated email (and also as part of the forgot-password workflow). The plugin includes a controller and GSPs to manage these instances.

The default action for the RegistrationCode controller is search. By default only the standard fields (username and token) are available but this is customizable with the s2ui-override script - see the Customization section for details.

You can search by any combination of fields, and both fields have an Ajax autocomplete to assist in finding instances. Leave both fields empty to return all instances.

Users Roles	Requestmaps Registration Code ACL Security Info	
	Spring Security Management Console	Logged in as admin (Logout)
	Registration Code Search	
Username: Token:		
Search		

Searching is case-insensitive and the search string can appear anywhere in the field. Results are shown paginated in groups of 10 and you can click on any header to sort by that field:

Spring Security Management Console

Logged in as admin (Logout)

		Registra	ation Code Sea
Username: Token: Search			
Token		Username	Date Created
e81b1e53648a47e6ae	f31a937154c7cb	registration_test_1	2015-12-19
4a7f88afec3746f7aab	2f5d0d8df6d8e	registration_test_1	2015-12-19
c7ac5f23be70495f93e	4450a78a27cb4	registration_test_1	2015-12-19
a50e061e0e2f424fb7f	bc2ff3dae597d	registration_test_1	2015-12-19
d6938ad63c414a69a0	da30a8c0619a60	registration_test_2	2015-12-19
4a589c642ea143abb2	ecaea57fa0a0cc	registration_test_2	2015-12-19
0a154624f36d42e4aa	68991a9477bd04	registration_test_2	2015-12-19
3842a6ae102a431c8e	48177c16720713	registration_test_3	2015-12-19
84cefa66465a460c82	f46120d9098686	registration_test_3	2015-12-19
fd1e40a7b31f4e8282			

1 2 Next

Showing 1 through 10 out of 14.

5.6. RegistrationCode edit

After clicking through to a RegistrationCode you get to the edit page (there are no view pages):

Users Roles Re	equestmaps Registration Code ACL Security In	nfo	
	Spring Security	v Management Console	Logged in as admin (Logout)
	Edit Re	egistrationCode	
Username	registration_test_1]	
Token	e81b1e53648a47e6aef31a937154c7cb]	
Date Created	2015-12-19		
Update	Delete		
			4

You can update the username or token attribute or delete the RegistrationCode.

Since instances are created during the "User Registration" and "Forgot Password" workflows, there is no functionality in this plugin to create new instances.

Chapter 6. Forgot Password

Like the Registration workflow, the Forgot Password workflow is expected to be user-facing. So it's not available in the admin menu like the User, Role, and other backend functionality - you'll need to expose them to your users.

One way to do this is to replace the default login.gsp that's provided by the Spring Security Core plugin with this plugin's version. You can do this by running grails s2ui-override auth - see the section on Customization for more details. If you do this your users will have links to both workflows from the login screen:

Jsername:	
Password:	
🗹 Remember me Forgot p	assword?
	Login

6.1. Forgot Password

Navigate to /register/forgotPassword:

	Forgot Password
Enter you to reset	ur username and we'll send a link your password to the address we have for your account.
Username	
	Reset my password

After entering a valid username an email will be sent and you'll see a success screen:

Forgot Password	
Your password reset email was sent - check your mail!	
	4

Click on the link in the email:



and you'll open the reset password form:

	Reset Password
	Enter your new password
Password Password (again)	
	Update my password

After entering a valid password you'll finalize the process, which involves storing the new

password hashed in the user table and pre-authenticating, then redirecting to the configured destination:



Your password was successfully changed

Logged in as testuser (Logout)

6.2. Configuration

The post-reset destination url is configurable in grails-app/conf/application.groovy using the postResetUrl attribute:

grails.plugin.springsecurity.ui.forgotPassword.postResetUrl = '/reset'

If you don't specify a value then the defaultTargetUrl value will be used, which is '/' by default.

You can customize the subject, body, and from address of the reset email by overriding the default values in grails-app/conf/application.groovy, for example:

```
grails.plugin.springsecurity.ui.forgotPassword.emailBody = '...'
grails.plugin.springsecurity.ui.forgotPassword.emailFrom = '...'
grails.plugin.springsecurity.ui.forgotPassword.emailSubject = '...'
```

The emailBody property should be a GString and will have the User domain class instance in scope in the user variable, and the generated url to click to reset the password in the url variable.

6.3. Mail configuration

By default the plugin uses the Mail plugin to send emails, but only if it installed. This is configurable by registering your own MailStrategy implementation - see [the section on configuration|guide:customization] for more information. The plugin assumes that the Mail plugin and an SMTP server are already configured.

6.4. Notes

Like the registration code, consider this workflow as starter code. Run grails s2ui-override register to copy the registration controller and GSPs into your application to be customized.



RegisterController and its GSPs assume that your User domain class has an email field.

Chapter 7. ACL Management

ACL management should be done using the API exposed by AclService and AclUtilService. Both services have a much more intuitive and convenient high-level approach to managing ACLs, ACEs, etc. The functionality in this plugin is to provide a CRUD interface for fine-grained ACL management.

The ACL menu is only available if the ACL plugin is installed.

7.1. AclClass Management

The default action for the AclClass controller is search. By default only the standard fields are available but this is customizable with the s2ui-override script - see the Customization section for details.

The className field has an Ajax autocomplete to assist in finding instances. Leave the field empty to return all instances.

	Spring Security Management Console	Logged in as admin (Logout)
	AclClass Search	
Class Name:		
Search		

Searching is case-insensitive and the search string can appear anywhere in the field. Results are shown paginated in groups of 10 and you can click on the className column header to sort the results by that field:

	Spring Security Management Console	Logged in as admin (Logout)
	AclClass Search	
Class Name:		
Search		
Class Name		Ŕ
com.burtbeckwith.testapp.doma	in.Report	

Showing 1 through 1 out of 1.

7.1.1. AclClass Edit

After clicking through an AclClass you get to the edit page (there are no view pages):

Spring Security Management Console	Logged in as admin (Logout)
Edit AclClass	
Class Name com.burtbeckwith.testapp.domain.Report	
View Associated OIDs	
View Associated ACL Entries	
Update Delete	ø

You can update the name, and delete the instance if there aren't any associated AclObjectIdentity or AclEntry instances - by default there is no support for cascading.

You can also see the associated AclObjectIdentity instances (OIDs) or AclEntry instances.

7.1.2. AclClass Create

You can create new instances by going to /aclClass/create or by clicking the Create action in the Class menu under ACL.

Spring Security Ma	anagement Console Logged in as admin (Logout)
Create /	AclClass
Class Name)
Create	
	A

7.2. AclSid Management

The default action for the AclSid controller is search. By default only the standard fields are available but this is customizable with the s2ui-override script - see the Customization section for details.

The sid field has an Ajax autocomplete to assist in finding instances. Leave the field empty and principal set to Either to return all instances.

			Spring S	ecurity Management Console	Logged in as admin (Logout)
				AclSid Search	
SID:					
	True	False	Either		
Principal:					
Search					

Results are shown paginated in groups of 10. The column headers are clickable and will sort the results by that field:

			Spring S	ecurity Management Console	Logged in as admin (Logout)
				AclSid Search	
SID:					
	True	False	Either		
Princip	al: 🔲				
Sea	rch				
SID	Principal				
user2	I rue				
admin	True				
user1	True				

Showing 1 through 3 out of 3.

7.2.1. AclSid Edit

After clicking through to a sid you get to the edit page (there are no view pages):

	Registration Code ACL Security Info	
	Spring Security Management Console	Logged in as admin (Logout)
	Edit AclSid	
SID	(admin)	
Principal		
View Ass	ociated OIDs	
View Ass	ociated ACL Entries	
Update	Delete	<i>h</i>

You can update the name and whether it's a Principal sid or a Role sid, and delete the instance if there aren't any associated AclObjectIdentity or AclEntry instances - by default there is no support

for cascading.

You can also see the associated AclObjectIdentity instances (OIDs) or AclEntry instances.

7.2.2. AclSid Create

You can create new instances by going to /aclSid/create or by clicking the Create action in the SID menu under ACL.

Users Roles F	Registration Code	ACL Security Info		
		Spring Secu	rity Management Console	Logged in as admin (Logout)
			Create AclSid	
SID)	
Principal				
Create				
				ß

7.3. AclObjectIdentity Management

The default action for the AclObjectIdentity controller is search. By default only the standard fields are available but this is customizable with the s2ui-override script - see the Customization section for details.

Leave all fields at their default values to return all instances.

		Sp	ring Securit	y Management Console	Logged in as admin (Logout)
			AclObj	ectIdentity Search	
AclClass: Object ID:	All		٥		
Owner: Parent:					
	True	False	Either		
Entries Inheriting:			2		

Results are shown paginated in groups of 10 and you can click on any header to sort by that field:

			Sp	ring Sec	urity Manager	nent C	onsole	Logged in as admin (Logout)		
	AclObjectIdentity Search									
Ad	clClass:	All		٥						
O	oject ID:									
0	wner:	All 🗘								
Pa	arent:									
		True	False	Either						
Er	ntries Inheriting:									
	Search									
ID	AclClass			Object ID	Entries Inheriting	Owner	Parent			
з	com.burtbeckw	ith.testapp.	domain.Report	3	True	admin				
6	com.burtbeckw	ith.testapp.	domain.Report	6	True	admin				
1	com.burtbeckw	ith.testapp.	domain.Report	1	True	user1				
4	com.burtbeckw	ith.testapp.	domain.Report	4	True	admin				
10	com.burtbeckw	ith.testapp.	domain.Report	10	True	admin				
8	com.burtbeckw	ith.testapp.	domain.Report	8	True	admin				
7	com.burtbeckw	ith.testapp.	domain.Report	7	True	admin				
5	com.burtbeckw	ith.testapp.	domain.Report	5	True	admin				
9	com.burtbeckw	ith.testapp.	domain.Report	9	True	admin				
2	com.burtbeckw	ith.testapp.	domain.Report	2	True	user1				
1	2 3 4 5	6 7 8	9 10 Next							

Showing 1 through 10 out of 100.

7.3.1. AclObjectIdentity Edit

After clicking through to an AclObjectIdentity you get to the edit page (there are no view pages):

	Spring Security Management Console	Logged in as admin (Logout)
	Edit AclObjectIdentity	
AclClass	com.burtbeckwith.testapp.domain.Report	
Object ID	3	
Owner	admin 🗘	
Parent		
Entries Inheriting		
View Associated	ACL Entries	
Update De	lete	

You can update any of the attributes, and can delete the instance if there aren't any associated AclEntry instances - by default there is no support for cascading.

You can also see the associated AclEntry instances.

7.3.2. AclObjectIdentity Create

You can create new instances by going to /aclObjectIdentity/create or by clicking the Create action in the OID menu under ACL.

Users Roles Registr	ation Code ACL Security Info	
	Spring Security Management Console	Logged in as admin (Logout)
	Create AclObjectIdentity	
AclClass		
Object ID		
Owner		
Parent		
Entries Inheriting		
Create		

7.4. AclEntry Management

The default action for the AclEntry controller is search. By default only the standard fields are available but this is customizable with the s2ui-override script - see the Customization section for details.

Leave all fields at their default values to return all instances.

		Spi	ring Securit	y Management Console	Logged in as admin (Logour
			A	clEntry Search	
AclObjectIdentity	:				
Ace Order:					
SID:	All				
Mask:					
	True	False	Either		
Granting:					
Audit Success:					
Audit Failure:					
Search					

Results are shown paginated in groups of 10 and you can click on any header to sort by that field:

					AclEntry Search			
Acl	ObjectIdentity:							
Ace	Order:							
SID	:	All	\$					
Mas	sk:							
		True	Fa	lse	Either			
Gra	nting:							
Auc	lit Success:							
Auc	lit Failure:							
S	Search							
9	Search							
ID	AclObjectIde	entity -	Ace Order	SID	Mask	Granting	Audit Success	Audit Failure
ID 99	AclObjectIde	entity a	Ace Order 2	SID user2	Mask BasePermission[W.=2	Granting True	Audit Success	Audit Failure
ID 99 94	AclObjectIde 5 4	entity	Ace Order 2 0	SID user2 user1	Mask BasePermission[W.=2 BasePermission[R=1]	Granting True True	Audit Success False False	Audit Failure False False
S ID 99 94 95	AclObjectIde 5 4 4	entity	Ace Order 2 0 1	SID user2 user1 user2	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1]	Granting True True True	Audit Success False False False	Audit Failure False False False
ID 99 94 95 100	AclObjectIde 5 4 4 5	entity i	Ace Order 2 0 1 3	SID user2 user1 user2 admin	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1] BasePermission[R=1]	Granting True True True True	Audit Success False False False False	Audit Failure False False False False
ID 99 94 95 100 96	AclObjectIde 5 4 4 5 5 4	entity	Ace Order 2 0 1 3 2	SID user2 user1 user2 admin admin	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1] BasePermission[A=10 BasePermission[A=10	Granting True True True True True True	Audit Success False False False False False	Audit Failure False False False False False
ID 99 94 95 100 96 93	AciObjectIde 5 4 4 5 5 4 3	entity i	Ace Order 2 0 1 3 2 2	SID user2 user2 user2 admin admin	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1] BasePermission[A=10 BasePermission[A=10 BasePermission[A=10	Granting True True True True True True True	Audit Success False False False False False False	Audit Failure False False False False False False
ID 99 94 95 100 96 93 91	AclObjectIde 5 4 5 5 4 5 4 3 3	entity	Ace Order 2 0 1 3 2 2 2 0	SID user2 user1 user2 admin admin user1	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1] BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[A=10	Granting True True True True True True True	Audit Success False False False False False False False	Audit Failure False False False False False False False
S ID 99 94 95 100 96 93 91 92	AclObjectIde 5 4 5 4 5 4 3 3 3 3	entity .	Ace Order 2 0 1 3 2 2 2 0 1	SID User2 User1 admin admin user1 user2	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1] BasePermission[A=10 BasePermission[A=10 BasePermission[R=1] BasePermission[R=1]	Granting True True True True True True True True	Audit Success False False False False False False False False	Audit Failure False False False False False False False False
ID 99 94 95 100 96 93 91 92 97	AclObjectIde 5 4 5 4 5 4 3 3 3 3 5	entity i	Ace Order 2 0 1 3 2 2 2 0 1 0	SID User2 User2 admin admin user1 User2 user2	Mask BasePermission[W.=2 BasePermission[R=1] BasePermission[R=1] BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[A=10 BasePermission[Granting True True True True True True True True	Audit Success False False False False False False False False False	Audit Failure False False False False False False False False False

Showing 1 through 10 out of 175.

7.4.1. AclEntry Edit

After clicking through to an AclEntry you get to the edit page (there are no view pages):

	Spring Security Managem	ent Console	Logged in as admin (Logout
	Edit AclEntry		
AclObjectIdentity	5		
Ace Order	2		
SID	user2 🗘		
Mask	2		
Granting			
Audit Success			
Audit Failure			
Update Dele	te		

You can update any of the attributes or delete the AclEntry.

7.4.2. AclEntry Create

You can create new instances by going to /aclEntry/create or by clicking the Create action in the

Entry menu under ACL.

Jsers Roles Registra	tion Code ACL Secur	rity Info		
		Spring Security	Management Console	Logged in as admin (Logout)
		Crea	te AclEntry	
AclObjectIdentity)	
Ace Order	0)	
SID	\$			
Mask	0)	
Granting				
Audit Success				
Audit Failure				
Create				
				<i>h</i>

Chapter 8. Persistent Cookie Management

Persistent cookies aren't enabled by default - you must enable them by running the s2-createpersistent-token script. See the Spring Security Core plugin documentation for details about this feature.

The Persistent Logins menu is only shown if this feature is enabled.

8.1. Persistent logins search

The default action for the PersistentLogin controller is search. By default only the standard fields (username, token, and series) are available but this is customizable with the s2ui-override script - see the Customization section for details.

You can search by any combination of fields, and all fields have an Ajax autocomplete to assist in finding instances. Leave all fields empty to return all instances.

	Spring Security Management Console	Logged in as admin (Logout)
	PersistentLogin Search	
Username:		
Token:		
Series:		
Search		A

Searching is case-insensitive and the search string can appear anywhere in the field. Results are shown paginated in groups of 10 and you can click on any header to sort by that field:

	5	Spring Security Manag	ement Cor	Isole Logged in as admin (Logout)
		PersistentLogin S	earch	
Username: admin				
Token:				
Series:				
Search				
				ß
Series	Username	Token	Last Used	
dWEAHu/0ueJGJBpoRMFiGQ==	admin	XQkCHT5wbuywP3RY/+zN6A==	07/25/2010	

Showing 1 through 1 out of 1.

8.2. Persistent logins edit

After clicking through to an instance you get to the edit page (there are no view pages):

	Spring Security Mana	agement Console	Logged in as admin (Logout)
	Edit Persister	itLogin	
Series	dWEAHu/0ueJGJBpoRMFiGQ==		
Username	admin		
Token	XQkCHT5wbuywP3RY/+zN6A==		
Last Used	2010-07-25 17:21:32 EDT		
Update	Delete		

You can update the token or lastUsed attribute or delete the instance.

8.3. Persistent logins creation

Since instances are created during authentication by the spring-security-core plugin, there is no functionality in this plugin to create new instances.

Chapter 9. Security Configuration UI

The Security Info menu has links for several pages that contain read-only views of much of the Spring Security configuration:

Users	Roles	Requestmaps	Registration Code	ACL	Security Info	
			Spri	ng	Security Configuration Mappings	ons
					Current Authentication User Cache	
					Filter Chains	
User	name:				Logout Handlers Voters	
		True	False		Authentication Providers	
Enab	oled:	\bigcirc	\bigcirc		Secure Channel Definition	
Acco	unt Ex	pired:			۲	
Acco	ount Lo	cked: 🔍			۲	

9.1. Security Configuration

The Security Configuration menu item displays all security-related attributes in application.groovy. The names omit the grails.plugin.springsecurity prefix:

Users Roles Requestmaps Persistent Logins Registra	tion Code ACL Security Info	
Spring Se	curity Management Console	Logged in as admin (Logout)
Show 10 • entries	curity Configuration	Search:
Name	Value	¢
acl.active	true	
acl.authority.changeAclDetails	ROLE_ADMIN	
acl.authority.changeOwnership	ROLE_ADMIN	
acl.authority.modifyAuditingDetails	ROLE_ADMIN	
active	true	
adh.ajaxErrorPage	/login/ajaxDenied	
adh.errorPage	/login/denied	
adh.useForward	true	
afterInvocationManagerProviderNames	[]	
ajaxCheckClosure		
Showing 1 to 10 of 161 entries	Previous 1 2 3	4 5 17 Next

9.2. Mappings

The Mappings menu item displays the current request mapping mode (Annotation, Requestmap, or Static) and all current mappings:

SecurityConfigType: Annotation

Mappings

Pattern	ConfigAttributes	HTTP Method
/	permitAll	all
/index	permitAll	all
/index.gsp	permitAll	all
/assets/**	permitAll	all
/**/js/**	permitAll	all
/**/css/**	permitAll	all
/**/Images/**	permitAll	all
/**/favicon.ico	permitAll	all
/register	permitAll	all
/register/**	permitAll	all
/registrationcode	permitAll	all
/registrationcode/**	permitAll	all
/securityinfo	permitAll	all
/securityinfo/**	permitAll	all
/login	permitAll	all
/login.*	permitAll	all
/login/**	permitAll	all
/logout	permitAll	all
/logout.*	permitAll	all
/logout/**	permitAll	all

9.3. Current Authentication

The Current Authentication menu item displays your Authentication information, mostly for reference to see what a typical one contains:

```
Users Roles Requestmaps Persistent Logins Registration Code ACL Security Info
Spring Security Management Console
Logged in as admin (Logout)
```

Current Authentication

Name	Value
Authorities	[ROLE_RUN_AS, ROLE_USER, ROLE_ADMIN, ROLE_SWITCH_USER]
Details	org.springframework.security.web.authentication.WebAuthenticationDetails@fffed504: RemoteIpAddress: 127.0.0.1; SessionId: 659C5EEAED7F26774E7214E7F0D35D3D
Principal	grails.plugin.springsecurity.userdetails.GrailsUser@586034f: Username: admin; Password: [PROTECTED]; Enabled: true; AccountNonExpired: true; credentialsNonExpired: true; AccountNonLocked: true; Granted Authorities: ROLE_ADMIN,ROLE_RUN_AS,ROLE_SWITCH_USER,ROLE_USER
Name	admin

9.4. User Cache

The User Cache menu item displays information about cached users if the feature is enabled (it is disabled by default).

Spring Security Management Console

Logged in as admin (Logout)

UserCache class: net.sf.ehcache.Cache

User Cache

Attribute	Value	
Size	1	
Status	STATUS_ALIVE	
Name	userCache	
GUID	127.0.1.1-458656cf-0031-4216-8f6d-ee25a6438d98	
	Statistics	
Attribute		Value
Cache Hits		1
In-memory Hits		2
On-disk Hits		0
Cache Misses		3
Object Count		1
Memory Store Object Cour	t	1
Disk Store Object Count		0
Eviction Count		0
	1 Cached User(s)	
Username User		

admin grails.plugin.springsecurity.userdetails.GrailsUser@586034f: Username: admin; Password: [PROTECTED]; Enabled: true; AccountNonExpired: true; credentialsNonExpired: true; AccountNonLocked: true; Granted Authorities: ROLE_ADMIN,ROLE_RUN_AS,ROLE_SWITCH_USER,ROLE_USER

9.5. Filter Chains

The Filter Chains menu item displays your configured Filter chains. It is possible to have multiple URL patterns each with its own filter chain, for example when using HTTP Basic Auth for a web service. By default since the 3.0.0 release the spring-security-core s2-quickstart script configures empty filter chains for static assets to avoid unnecessary security checks (although of course if you need to secure some or all of your static assets you should reconfigure these).

Users	Roles	Requestmaps	Persistent Logins	Registration Code	ACL	Security Info
				2		

URL Pattern	Filters
Ant [pattern='/assets/**']	none
Ant [pattern='/**/js/**']	none
Ant [pattern='/**/css/**']	none
Ant [pattern='/**/images/**']	none
Ant [pattern='/**/favicon.ico']	none
Ant [pattern='/**']	grails.plugin.springsecurity.web.SecurityRequestHolderFilter org.springframework.security.web.access.channel.ChannelProcessingFilter org.springframework.security.web.context.SecurityContextPersistenceFilter grails.plugin.springsecurity.web.authentication.logout.MutableLogoutFilter grails.plugin.springsecurity.web.authentication.GrailsUsernamePasswordAuthenticationFilter org.springframework.security.web.servletapi.SecurityContextHolderAwareRequestFilter grails.plugin.springsecurity.web.filter.GrailsRememberMeAuthenticationFilter grails.plugin.springsecurity.web.filter.GrailsAnonymousAuthenticationFilter org.springframework.security.web.access.ExceptionTranslationFilter org.springframework.security.web.access.intercept.FilterSecurityInterceptor org.springframework.security.web.authentication.switchuser.SwitchUserFilter

Filter Chains

Spring Security Management Console

9.6. Logout Handlers

The Logout Handlers menu item displays your registered LogoutHandlers. Typically there will be just the ones shown here, but you can register your own custom implementations, or a plugin might contribute more:

Users Role	s Requestmaps	Persistent Logins	Registration Code	ACL Security Info		
		Spr	ing Security I	Management Co	onsole	Logged in as admin (Logout)
			Logout	Handlers		
Class Nam	e					
org.springframework.security.web.authentication.rememberme.PersistentTokenBasedRememberMeServices						
org.springframework.security.web.authentication.logout.SecurityContextLogoutHandler						

9.7. Voters

The Voters menu item displays your registered AccessDecisionVoters. Typically there will be just the ones shown here, but you can register your own custom implementations, or a plugin might contribute more:

Users Roles Requestmaps Persistent Logins Registration Code ACL Security Info		
Spring Security Management Console	Logged in as admin (Logout)	
Voters		
Class Name		
org.springframework.security.access.vote.AuthenticatedVoter		
org.springframework.security.access.vote.RoleHierarchyVoter		
grails.plugin.springsecurity.web.access.expression.WebExpressionVoter		

grails.plugin.springsecurity.access.vote.ClosureVoter

9.8. Authentication Providers

The Authentication Providers menu item displays your registered AuthenticationProviders. Typically there will be just the ones shown here, but you can register your own custom implementations, or a plugin (e.g. LDAP) might contribute more:



 $org. spring framework. security. authentication. Remember {\tt MeAuthentication} Provider$

9.9. Secure Channel Definition

The Secure Channel Definition menu item displays your registered channel security mappings.

Users Roles Persistent Logins Registration Code ACL Security Info

Spring Security Management Console

Logged in as admin (Logout)

Secure Channel Definition

Pattern	ConfigAttributes
Ant [pattern='/secure/stuff/**']	[REQUIRES_SECURE_CHANNEL]
Ant [pattern='/insecure/stuff/**']	[REQUIRES_INSECURE_CHANNEL]
Ant [pattern='/**']	[ANY_CHANNEL]

Chapter 10. Customization

Most aspects of the plugin are configurable.

10.1. s2ui-override script

The plugin's controllers and GSPs are easily overridden using the s2ui-override script. The general syntax for running the script is

```
grails s2ui-override <type> <controller-package>
```

The script will copy an empty controller that extends the corresponding plugin controller into your application so you can override individual actions and methods as needed. It also copies the controller's GSPs. The exceptions are 'auth' and 'layout' which only copy GSPs.

The files copied for each type are summarized here:

- aclclass
 - controller/AclClassController.groovy
 - views/aclClass/create.gsp
 - views/aclClass/edit.gsp
 - views/aclClass/search.gsp
- aclentry
 - controller/AclEntryController.groovy
 - views/aclEntry/create.gsp
 - views/aclEntry/edit.gsp
 - views/aclEntry/search.gsp
- aclobjectidentity
 - controller/AclObjectIdentityController.groovy
 - views/aclObjectIdentity/create.gsp
 - views/aclObjectIdentity/edit.gsp
 - views/aclObjectIdentity/search.gsp
- aclsid
 - controller/AclSidController.groovy
 - views/aclSid/create.gsp
 - views/aclSid/edit.gsp
 - views/aclSid/search.gsp
- auth
 - views/login/auth.gsp
- layout

- views/layouts/springSecurityUI.gsp
- views/includes/_ajaxLogin.gsp
- persistentlogin
 - . controller/PersistentLoginController.groovy
 - views/persistentLogin/edit.gsp
 - views/persistentLogin/search.gsp
- register
 - . controller/RegisterController.groovy
 - views/register/forgotPassword.gsp
 - views/register/register.gsp
 - views/register/resetPassword.gsp
- registrationcode
 - controller/RegistrationCodeController.groovy
 - views/registrationCode/edit.gsp
 - views/registrationCode/search.gsp
- requestmap
 - controller/RequestmapController.groovy
 - views/requestmap/create.gsp
 - views/requestmap/edit.gsp
 - views/requestmap/search.gsp
- role
 - controller/RoleController.groovy
 - views/role/create.gsp
 - views/role/edit.gsp
 - views/role/search.gsp
- securityinfo
 - controller/SecurityInfoController.groovy
 - views/securityInfo/config.gsp
 - views/securityInfo/currentAuth.gsp
 - views/securityInfo/filterChains.gsp
 - views/securityInfo/logoutHandlers.gsp
 - views/securityInfo/mappings.gsp
 - views/securityInfo/providers.gsp
 - views/securityInfo/secureChannel.gsp
 - views/securityInfo/usercache.gsp
 - views/securityInfo/voters.gsp
- user
 - controller/UserController.groovy

- views/user/create.gsp
- views/user/edit.gsp
- views/user/search.gsp

10.2. I18N

All of the plugin's displayed strings are localized and stored in the plugin's grailsapp/i18n/messages.spring-security-ui.properties file. You can override any of these values by putting an override in your application's grails-app/i18n/messages.properties file.

10.3. application.groovy attributes

There are a few configuration options specified in DefaultUiSecurityConfig.groovy that can be overridden in your application's grails-app/conf/application.groovy

10.3.1. Registration attributes

These settings are used in the registration workflow; see the User Registration section for more details:

- grails.plugin.springsecurity.ui.register.defaultRoleNames
- grails.plugin.springsecurity.ui.register.emailBody
- grails.plugin.springsecurity.ui.register.emailFrom
- grails.plugin.springsecurity.ui.register.emailSubject
- grails.plugin.springsecurity.ui.register.postRegisterUrl

10.3.2. Forgot Password attributes

These settings are used in the forgot-password workflow; see the Forgot Password section for more details:

- grails.plugin.springsecurity.ui.forgotPassword.emailBody
- grails.plugin.springsecurity.ui.forgotPassword.emailFrom
- grails.plugin.springsecurity.ui.forgotPassword.emailSubject
- grails.plugin.springsecurity.ui.forgotPassword.postResetUrl

10.3.3. GSP layout attributes

The layout attribute in the GSPs is configurable. If this is the only change you want to make in some or all of the GSPs then you can avoid copying the GSPs into your application just to make this change.

The default value for the registration workflow GSPs (forgotPassword.gsp, register.gsp, and resetPassword.gsp) is "register" and the default for the rest is "springSecurityUI". These values can be overridden with the grails.plugin.springsecurity.ui.gsp.layoutRegister and

grails.plugin.springsecurity.ui.gsp.layoutUi settings.

10.3.4. Miscellaneous attributes

The role name required to be able to run as another user defaults to ROLE_SWITCH_USER but you can override this name with the grails.plugin.springsecurity.ui.switchUserRoleName setting.

10.4. CSS and JavaScript

The plugin uses the Asset Pipeline plugin to manage its resources. This makes it very easy to provide your own version of some or all of the static resources since asset-pipeline will always use a file in the application's assets directory instead of a plugin's if it exists.

Instead of depending on either the jQuery or jQuery UI plugins, this plugin includes its own copy of jquery.js, jquery-ui.js, and jquery-ui.css. Note that the versions are not hard-coded, but instead they take advantage of the feature in asset-pipeline where you can embed Groovy code in a file to specify the name and path.

The layouts use grails-app/assets/javascripts/jquery.js, which contains this:

```
//=require jquery/jquery-
${grails.plugin.springsecurity.ui.Constants.JQUERY_VERSION}.js
```

This resolves to grails-app/assets/javascripts/jquery/jquery-2.1.4.js, and to use your own version, either use the same approach in a file called jquery.js or rename your file to jquery.js.

Likewise for jQuery UI, the JavaScript file is grails-app/assets/javascripts/jquery-ui.js, which contains this

```
//=require jquery-ui/jquery-ui-
${grails.plugin.springsecurity.ui.Constants.JQUERY_UI_VERSION}.js
```

and the CSS file grails-app/assets/stylesheets/jquery-ui.css, which contains

```
/*
 *= require smoothness/jquery-ui-
${grails.plugin.springsecurity.ui.Constants.JQUERY_UI_VERSION}.css
 */
```

The JavaScript file resolves to grails-app/assets/javascripts/jquery-ui/jquery-ui-1.10.3.custom.js, and to use your own version, either use the same approach in a file called jqueryui.js or rename your file to jquery-ui.js.

The CSS file resolves to grails-app/assets/stylesheets/smoothness/jquery-ui-1.10.3.custom.css, and to use your own version, either use the same approach in a file called jquery-ui.js or rename your file to jquery-ui.js.

Use your own jquery-ui.js and/or jquery-ui.css to override the plugin's.

The springSecurityUI.gsp layout includes grails-app/assets/stylesheets/spring-security-ui.css, which has no style declarations and only includes other CSS files:

```
/*
 *= require reset.css
 *= require jquery-ui.css
 *= require jquery.jdMenu.css
 *= require jquery.jdMenu.slate.css
 *= require jquery.jgrowl.css
 *= require spring-security-ui-common.css
 */
```

and grails-app/assets/javascripts/spring-security-ui.js which has no JavaScript code and only includes other JavaScript files:

```
//= require jquery.js
//= require jquery-ui.js
//= require jquery/jquery.jgrowl.js
//= require jquery/jquery.positionBy.js
//= require jquery/jquery.bgiframe.js
//= require jquery/jquery.jdMenu.js
//= require jquery/jquery.form.js
//= require spring-security-ui-ajaxLogin.js
```

The register.gsp layout layout includes grails-app/assets/stylesheets/spring-security-uiregister.css, which has no style declarations and only includes other CSS files:

/* *= require reset.css *= require jquery-ui.css *= require jquery.jgrowl.css *= require spring-security-ui-common.css */

and grails-app/assets/javascripts/spring-security-ui-register.js which has no JavaScript code and only includes other JavaScript files:

```
//= require jquery.js
//= require jquery-ui.js
//= require jquery/jquery.jgrowl.js
```

The remaining JavaScript files are

• grails-app/assets/javascripts/spring-security-ui-ajaxLogin.js

- grails-app/assets/javascripts/jquery/jquery.bgiframe.js
- grails-app/assets/javascripts/jquery/jquery.dataTables.js
- grails-app/assets/javascripts/jquery/jquery.form.js
- grails-app/assets/javascripts/jquery/jquery.jdMenu.js
- grails-app/assets/javascripts/jquery/jquery.jgrowl.js
- grails-app/assets/javascripts/jquery/jquery.positionBy.js

and the remaining CSS files are

- grails-app/assets/stylesheets/jquery.dataTables.css
- grails-app/assets/stylesheets/jquery.jdMenu.css
- grails-app/assets/stylesheets/jquery.jdMenu.slate.css
- grails-app/assets/stylesheets/jquery.jgrowl.css
- grails-app/assets/stylesheets/reset.css
- grails-app/assets/stylesheets/spring-security-ui-auth.css
- grails-app/assets/stylesheets/spring-security-ui-common.css

10.5. Password Hashing

In recent versions of the Spring Security Core plugin, the "User" domain class is generated by the s2-quickstart script with code to automatically hash the password. This makes the code simpler (for example in controllers where you create users or update user passwords) but older generated classes don't have this generated code. This presents a problem for plugins like this one since it's not possible to reliably determine if the domain class hashes the password or if you use the older approach of explicitly calling springSecurityService.encodePassword().

The unfortunate consequence of mixing a newer domain class that does password hashing with controllers that call springSecurityService.encodePassword() is the the passwords get double-hashed, and users aren't able to login. So to get around this there's a configuration option you can set to tell this plugin's controllers whether to hash or not: grails.plugin.springsecurity.ui.encodePassword.

This option defaults to false, so if you have an older domain class that doesn't handle hashing just enable this plugin's hashing:

grails.plugin.springsecurity.ui.encodePassword = true

h4. Strategy classes

The plugin's SpringSecurityUiService implements several "strategy" interfaces to make it possible to override its functionality in a more fine-grained way.

These are defined by interfaces in the grails.plugin.springsecurity.ui.strategy package:

- AclStrategy
- ErrorsStrategy
- MailStrategy
- PersistentLoginStrategy
- PropertiesStrategy
- QueryStrategy
- RegistrationCodeStrategy
- RequestmapStrategy
- RoleStrategy
- UserStrategy

The controllers, taglib, and even the service never call strategy methods directly on the service, only via a strategy interface.

Each interface has a default implementation, e.g. DefaultAclStrategy, DefaultErrorsStrategy, etc., and these simply delegate to SpringSecurityUiService (except for MailStrategy, which has MailPluginMailStrategy as its default implementation which uses the Mail plugin to send emails). Each of the default implementations is registered as a Spring bean:

- uiAclStrategy
- uiErrorsStrategy
- uiMailStrategy
- uiPersistentLoginStrategy
- uiPropertiesStrategy
- uiQueryStrategy
- uiRegistrationCodeStrategy
- uiRequestmapStrategy
- uiRoleStrategy
- uiUserStrategy

To override the functionality defined in one of the strategy interfaces, register your own implementation of the interface in your application's grails-app/conf/spring/resources.groovy, e.g.

```
import com.myapp.MyRequestmapStrategy
beans = {
    uiRequestmapStrategy(MyRequestmapStrategy)
}
```

and yours will be used instead.

10.6. Password Verification

By default the registration controller has rather strict requirements for valid passwords; they must be between 8 and 64 characters and must include at least one uppercase letter, at least one number, and at least one symbol from "!@#\$%^&". You can customize these rules with these

Property	Default Value
grails.plugin.springsecurity.ui.password.minLen gth	8
grails.plugin.springsecurity.ui.password.maxLen gth	64
grails.plugin.springsecurity.ui.password.validati onRegex	"^.*(?=.*\\d)(?=.*[a-zA-Z])(?=.*[!@#\$%^&]).*\$"

Chapter 11. Scripts

11.1. s2ui-override

Purpose

Generates controllers that extend the plugin's controllers and copies their GSPs to your application for overriding of functionality.

The general format is:

```
grails s2ui-override <type> [controllerPackage]
```

The script will copy an empty controller that extends the corresponding plugin controller into your application so you can override individual actions and methods as needed. It also copies the controller's GSPs. The exceptions are when type is 'auth' or 'layout' which only copy GSPs.

See the Customization section for more details.