GateIn Reference Guide

by the GateIn community , JBoss by Red Hat , and eXo Platform

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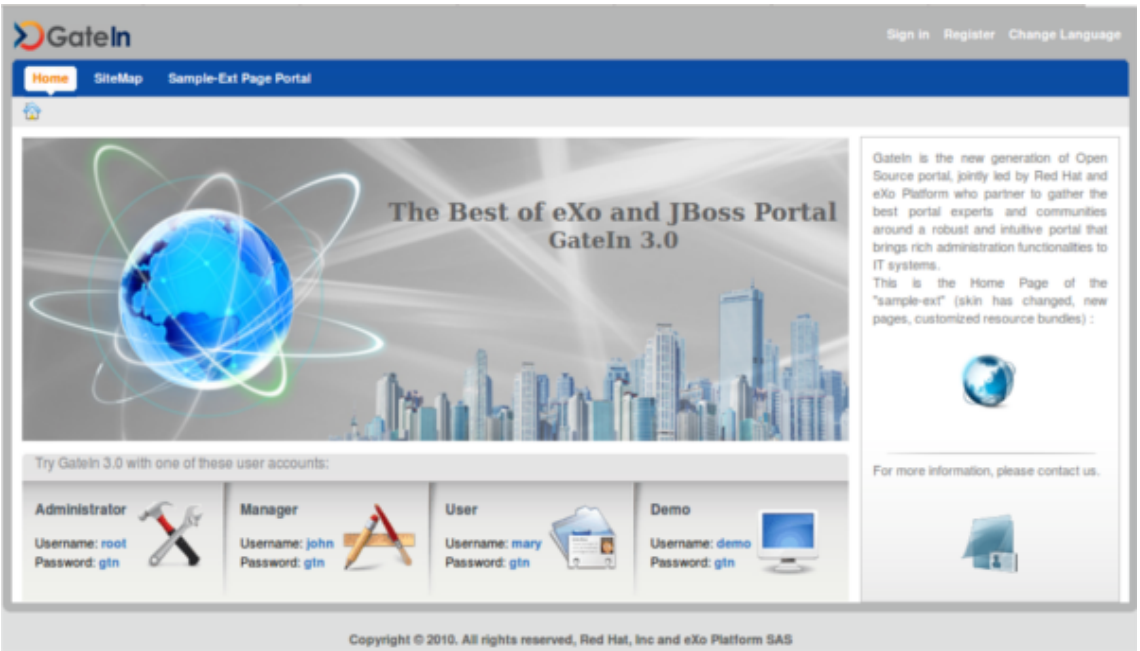
Introduction

GateIn 3.2 is the merge of two mature Java projects; JBoss Portal and eXo Portal. This new community project takes the best of both offerings and incorporates them into a single portal framework. The aim is to provide an intuitive user-friendly portal, and a framework to address the needs of today's Web 2.0 applications.



This book provides a deep-dive information about installation and configuration of the services provided by GateIn.

1.1. Related Links

- GateIn homepage: *www.gatein.org* [http://www.gatein.org]
- GateIn videos: *vimeo.com/channels/gatein* [http://vimeo.com/channels/gatein]
- GateIn documentation: *www.jboss.org/gatein/documentation.html* [http://www.jboss.org/gatein/documentation.html]
- GateIn downloads: *www.jboss.org/gatein/downloads.html* [http://www.jboss.org/gatein/downloads.html]

Configuration

2.1. Database Configuration

2.1.1. Overview

GateIn 3.2 has two different database dependencies. One is the identity service configuration, which depends on Hibernate. The other is Java content repository (JCR) service, which depends on JDBC API, and can integrate with any existing datasource implementation.

When you change the database configuration for the first time, GateIn will automatically generate the proper schema (assuming that the database user has the appropriate permissions).

GateIn 3.2 assumes the default encoding for your database is `latin1`. You may need to change this parameter for your database in order for GateIn 3.2 to work properly.

2.1.2. Configuring the database for JCR

To configure the database used by JCR you will need to edit the file:

```
$JBOSS_HOME/server/default/conf/gatein/configuration.properties
```

For Tomcat, the file is located at

```
$TOMCAT_HOME/gatein/conf/configuration.properties
```

And edit the values of driver, url, username and password with the values for your JDBC connection (please, refer to your database JDBC driver documentation).

```
gatein.jcr.datasource.driver=org.hsqldb.jdbcDriver
gatein.jcr.datasource.url=jdbc:hsqldb:file:${gatein.db.data.dir}/data/jdbcjcr_${name}
gatein.jcr.datasource.username=sa
gatein.jcr.datasource.password=
```

By default, the name of the database is "jdbcjcr_${name}" - ${name} should be a part of the database name, as it is dynamically replaced by the name of the portal container extension (for instance, gatein-sample-portal.ear defines "sample-portal" as container name and the default portal defines "portal" as container name).

In the case of HSQL the databases are created automatically. For any other database you will need to create a database named jdbcjcr_portal (and "jdbcjcr_sample-portal" if you have gatein-sample-

portal.ear in $JBOSS_HOME/server/default/deploy - note that some databases don't accept '-' in the database name, so you may have to remove $JBOSS_HOME/server/default/deploy/gatein-sample-portal.ear)

Make sure the user has rights to create tables on jdbcjcr_portal, and to update them as they will be automatically created during the first startup .

Also add your database's JDBC driver into the classpath - you can put it in $JBOSS_HOME/server/default/lib (or $TOMCAT_HOME/lib, if you are running on Tomcat)

MySQL example:

Let's configure our JCR to store data in MySQL. Let's pretend we have a user named "gateinuser" with a password "gateinpassword". We would create a database "mygateindb_portal" (remember that _portal is required), and assign our user the rights to create tables.

Then we need to add MySQL's JDBC driver to the classpath, and finally edit gatein.ear/02portal.war/WEB-INF/conf/jcr/jcr-configuration to contain the following:

```
gatein.jcr.datasource.driver=com.mysql.jdbc.Driver
gatein.jcr.datasource.url=jdbc:mysql://localhost:3306/mygateindb${container.name.suffix}
gatein.jcr.datasource.username=gateinuser
gatein.jcr.datasource.password=gateinpassword
```

2.1.3. Configuring the database for the default identity store

By default, users are stored in a database. To change the database in which to store users, you will need to edit the file:

```
$JBOSS_HOME/server/default/conf/gatein/configuration.properties
```

For Tomcat, the file is located at

```
$TOMCAT_HOME/gatein/conf/configuration.properties
```

You will find the same kind of configuration as in jcr-configuration.xml:

```
gatein.idm.datasource.driver=org.hsqldb.jdbcDriver
gatein.idm.datasource.url=jdbc:hsqldb:file:${gatein.db.data.dir}/data/jdbcidm_${name}
gatein.idm.datasource.username=sa
gatein.idm.datasource.password
```

2.2. E-Mail Service Configuration

2.2.1. Overview

GateIn 3.2 includes an e-mail sending service that needs to be configured before it can function properly. This service, for instance, is used to send e-mails to users who forgot their password or username.

2.2.2. Configuring the outgoing e-mail account

The e-mail service can use any SMTP account configured in $JBOSS_HOME/server/default/conf/gatein/configuration.properties (or $TOMCAT_HOME/gatein/conf/configuration.properties if you are using Tomcat).

The relevant section looks like:

```
# EMail
gatein.email.smtp.username=
gatein.email.smtp.password=
gatein.email.smtp.host=smtp.gmail.com
gatein.email.smtp.port=465
gatein.email.smtp.starttls.enable=true
gatein.email.smtp.auth=true
gatein.email.smtp.socketFactory.port=465
gatein.email.smtp.socketFactory.class=javax.net.ssl.SSLSocketFactory
```

It is preconfigured for GMail, so that any GMail account can easily be used (simply use the full GMail address as username, and fill-in the password.

In corporate environments you will want to use your corporate SMTP gateway. When using it over SSL, like in default configuration, you may need to configure a certificate truststore, containing your SMTP server's public certificate. Depending on the key sizes, you may then also need to install Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files for your Java Runtime Environment.

2.3. HTTPS Configuration

2.3.1. Overview

GateIn 3.2 default run on HTTP mode. However, for security purpose, you can config GateIn to run on HTTPS mode. This section show you how to config GateIn with HTTPS mode.

2.3.2. Generate your key

If you haven't your own X.509 certificate, you can make a simple certificate using keytool command:

```
keytool -genkey -alias serverkeys -keyalg RSA -keystore server.keystore -storepass 123456 -keypass 123456 -dname "CN=localhost,  OU=MYOU, O=MYORG, L=MYCITY, ST=MYSTATE, C=MY"
```

Now, your key is stored in server.keystore

You need to import your key into the Sun JDK keystore (This is required to help running gadget features)

```
keytool -importkeystore -srckeystore server.keystore -destkeystore $JAVA_HOME/jre/lib/security/cacerts
```

2.3.3. Setup Jboss configuration to use your key

Edit server.xml from jboss/server/<NAME>/deploy/jbossweb.sar folder. Comment lines:

```
<Connector protocol="HTTP/1.1" port="8080" address="${jboss.bind.address}"
        connectionTimeout="20000" redirectPort="8443" />
```

Uncomment lines and change keystoreFile and keystorePass to values of your key:

```
<Connector protocol="HTTP/1.1" SSLEnabled="true"
    port="8443" address="${jboss.bind.address}"
    scheme="https" secure="true" clientAuth="false"
    keystoreFile="$JAVA_HOME/jre/lib/security/cacerts"
    keystorePass="123456" sslProtocol = "TLS" />
```

2.3.4. Setup Tomcat configuration to use your key

Edit server.xml from tomcat/conf folder. Comment lines:

```
<Connector port="8080" protocol="HTTP/1.1"
  maxThreads="150" connectionTimeout="20000"
  redirectPort="8443" URIEncoding="UTF-8"
```

```
  emptySessionPath="true"/>
```

Uncomment lines and add keystoreFile and keystorePass values:

```
<Connector port="8443" protocol="HTTP/1.1" SSLEnabled="true"
  maxThreads="150" scheme="https" secure="true"
  clientAuth="false" sslProtocol="TLS"
  keystoreFile="$JAVA_HOME/jre/lib/security/cacerts"
  keystorePass="123456" />
```

Restart GateIn. If your configuration is correct, you can access to GateIn via address: `https://<ServerAddress>:8443/portal`

2.4. Configuration of custom data validators

2.4.1. Overview

GateIn 3.2 includes a user-configurable validator that can be applied to input fields of different bundled portlets. Currently, this validator is only used to configure the validation of user name formats in the user account, user registration and group membership portlets, though the architecture allows for configurable validation to be used in different contexts if needed.

The validator can be configured via properties in the `configuration.properties` file found in the GateIn configuration directory. By default, this directory is found at `$JBOSS_HOME/server/default/conf/gatein/` if you are using JBoss Application Server or `$TOMCAT_HOME/gatein/conf/` if you are using Tomcat.

The architecture supports several configurations that can be activated and associated to specific instances of the user-configurable validator when they are created and assigned to fields in portlets. We will only concern ourselves with the currently supported use cases, which are creation/modification of a user name during registration/modification of a user and group membership assignments.

2.4.2. Validator configuration

A configuration is created by adding an entry in `configuration.properties` using the `gatein.validators.` prefix followed by the name of the configuration, a period '.' and the name of the validation aspect you want to configure. The user-configurable validator currently supports four different aspects per configuration, as follows, where `{configuration}` refers to the configuration name:

- `gatein.validators.{configuration}.length.min`: minimal length of the validated field

- `gatein.validators.{configuration}.length.max`: maximal length of the validated field
- `gatein.validators.{configuration}.regexp`: regular expression to which values of the validated field must conform
- `gatein.validators.{configuration}.format.message`: information message to display when the value of the validated field doesn't conform to the specified regular expression

Only two configurations are currently supported by GateIn, one, named `username`, to configure validation of user names when they are created/modified and the other, named `groupmembership`, to configure validation of user names in the context of group memberships.

For example, if you want to make sure that your users use an email address as their user name, you could use the following configuration:

Example 2.1.

```
# validators
gatein.validators.username.regexp=^[A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\.[A-za-z]{2,4}$
gatein.validators.username.format.message=Username must be a valid email address.
```

Note

If you don't change the configuration of the validator, user names will be validated as follows:

- Length must be between 3 and 30 characters.
- Only lowercase letters, numbers, undescores (_) and period (.) can be used.
- No consecutive undescores (_) or period (.) can be used.
- Must start with a letter.
- Must end with a letter or number.

Important

Some components that leverage GateIn depend on user names being all lowercase. We therefore strongly recommend that you also only accept lowercase user names.

2.4.3. Developer information

The user-configurable validator is implemented by the `org.exoplatform.webui.form.validator.UserConfigurableValidator` class. Please refer to its documentation for more details.

To use a specific validator configuration to validate a given field value, add the validator to the field as follows, where `configurationName` is a `String` representing the name of the configuration to use:

```
addValidator(UserConfigurableValidator.class, configurationName))
```

The validator instance can then be configured by adding the relevant information in `configuration.properties`, for example:

```
# validators
gatein.validators.configurationName.length.min=5
gatein.validators.configurationName.length.max=10
gatein.validators.configurationName.regexp=^u\d{4,9}$
 gatein.validators.configurationName.format.message=Username must start with "u" and be followed by 4 to 9 digits.
```

Alternatively, a resource key can also be passed to the `addValidator` method to specify which localized message should be used in case a validation error occurs, for example as follows: `configurationName`

```
addValidator(UserConfigurableValidator.class, UserConfigurableValidator.GROUPMEMBERSHIP,
        UserConfigurableValidator.GROUP_MEMBERSHIP_LOCALIZATION_KEY);
```

Portal Development

3.1. Skinning the portal

3.1.1. Overview

GateIn 3.2 provides robust skinning support for the entire portal User Interface (UI). This includes support for skinning all of the common portal elements as well as being able to provide custom skins and window decoration for individual portlets. All of this designed with common graphic resource reuse and ease of development in mind.

3.1.2. Skin Components

The complete skinning of a page can be decomposed into three main parts:

Portal Skin
: The portal skin contains the css styles for the portal and its various UI components. This should include all the UI components except for the window decorators and portlet specific styles.

Window Styles
: The CSS styles associated with the porlet window decorators. The window decorators contain the control buttons and boarders surrounding each portlet. Individual portlets can have their own window decorator selected, or be rendered without one.

Portlet Skins
: The portlet skins effect how portlets are rendered on the page. There are two main ways this can be affected:

  Portlet Specification CSS Classes
  : The portlet specification defines a set of css classes that should be available to portlets. GateIn 3.2 provides these classes as part of the portal skin. This allows each portal skin to define its own look and feel for these default values.

  Portlet Skins
  : GateIn 3.2 provides a means for portlet css files to be loaded based on the current portal skin. This allows a portlet to provide different css styles to better match the current portal look and feel. Portlet skins provide a much more customizable css experience than just using the portlet specification css classes.

Note

The window decorators and the default portlet specification css classes should be considered separate types of skinning components, but they need to be included

as part of the overall portal skin. The portal skin must include these component´s css classes or they will not be displayed correctly.

A portlet skin doesn't need to be included as part of the portal skin and can be included within the portlets web application.

3.1.3. Skin Selection

3.1.3.1. Skin Selection Through the User Interface

There are a few means in which a skin can be selected to be displayed to the user. The easiest way to change the skin is select it through the user interface. An admin can change the default skin for the portal, or a logged in user can select which skin they would prefer to be displayed.

Please see the User Guide for information on how to change the skin using the user interface.

3.1.3.2. Setting the Default Skin within the Configuration Files

The default skin can also be configured through the portal configuration files if using the admin user interface is not desired. This will allow for the portal to have the new default skin ready when GateIn 3.2 is first started.

The default skin of the portal is called `Default`. To change this value add a `skin` tag in the `02portal.war/WEB-INF/conf/portal/portal/classic/portal.xml` configuration file.

To change the skin to `MySkin` you would make the following changes:

```
<portal-config>
        <portal-name>classic</portal-name>
        <locale>en</locale>
        <access-permissions>Everyone</access-permissions>
        <edit-permission>*:/platform/administrators</edit-permission>
        <skin>MySkin</skin>
        ...
```

3.1.4. Skins in Page Markups

A GateIn 3.2 skin contains css styles for the portal's components but also shares components that may be reused in portlets. When GateIn 3.2 generates a portal page markup, it inserts stylesheet links in the page's `head` tag.

There are two main types of css links that will appear in the `head` tag: a link to the portal skin css file and a link to the portlet skin css files.

Portal Skin
: The portal skin will appear as a single link to a css file. This link will contain contents from all the portal skin classes merged into one file. This allow for the portal skin to be transfered more quickly as a single file instead of many multiple smaller files. Included with every page render.

Portlet Skin
: Each portlet on a page may contribute its own style. The link to the portlet skin will only appear on the page if that portlet is loaded on the current page. A page may contain many portlet skin css links or none.

In the code fragment below you can see the two types of links:

```
<head>
...
<!-- The portal skin -->
<link id="CoreSkin" rel="stylesheet" type="text/css" href="/eXoResources/skin/Stylesheet.css" /
>

<!-- The portlet skins -->
<link id="web_FooterPortlet" rel="stylesheet" type="text/css" href= "/web/skin/portal/webui/
component/UIFooterPortlet/DefaultStylesheet.css" />
<link id="web_NavigationPortlet" rel="stylesheet" type="text/css" href= "/web/skin/portal/webui/
component/UINavigationPortlet/DefaultStylesheet.css" />
<link id="web_HomePagePortlet" rel="stylesheet" type="text/css" href= "/portal/templates/skin/
webui/component/UIHomePagePortlet/DefaultStylesheet.css" />
<link id="web_BannerPortlet" rel="stylesheet" type="text/css" href= "/web/skin/portal/webui/
component/UIBannerPortlet/DefaultStylesheet.css" />
...
</head>
```

Note

Window styles and the portlet specification CSS classes are included within the portal skin.

3.1.5. The Skin Service

The skin service is a GateIn 3.2 service which manages the various types of skins. It is reponsible for discovering and deploying the skins into the portal.

3.1.5.1. Skin configuration

GateIn 3.2 automatically discovers web archives that contain a file descriptor for skins (`WEB-INF/gatein-resources.xml`). This file is reponsible for specifying the portal, portlet and window decorators to be deployed into the skin service.

The full schema can be found in lib directory:
`exo.portal.component.portal.jar/gatein_resources_1_0.xsd`

Here is an example where we define a skin (MySkin) with its CSS location, and specify a few window decorator skins:

```
<gatein-resources>
  <portal-skin>
    <skin-name>MySkin</skin-name>
    <css-path>/skin/myskin.css</css-path>
    <overwrite>false</overwrite>
  </portal-skin>
</gatein-resources>

  <!-- window style -->
  <window-style>
    <style-name>MyThemeCategory</style-name>
    <style-theme>
      <theme-name>MyThemeBlue</theme-name>
    </style-theme>
    <style-theme>
      <theme-name>MyThemeRed</theme-name>
    </style-theme>
    ...
```

3.1.5.2. Resource Request Filter

Because of the Right-To-Left support all CSS files need to be retrieved through a Servlet filter and the web application needs to be configured to activate this filter. This is already done for 01eXoResources.war web application which contains the default skin.

Any new web applications containing skinning css files will need to have the following added to their `web.xml` :

```
<filter>
    <filter-name>ResourceRequestFilter</filter-name>
    <filter-class>org.exoplatform.portal.application.ResourceRequestFilter</filter-class>
```

```
</filter>

<filter-mapping>
<filter-name>ResourceRequestFilter</filter-name>
<url-pattern>*.css</url-pattern>
</filter-mapping>
```

Note

The `display-name` element will also need to be specified in the `web.xml` for the skinning service to work properly with the web application.

3.1.6. The Default Skin

The default skin for GateIn 3.2 is located as part of the `01eXoResource.war`. The main files associated with the skin is show below:

```
WEB-INF/gatein-resources.xml                    (1)
WEB-INF/web.xml                                 (2)
skin/Stylesheet.css
```

1. gatein-resources.xml: defines the skin setup to use
2. web.xml: contains the resource filer and has the display-name set
3. Stylesheet.css: contains the CSS class definitions for this skin.

gatein-resources.xml
: For the default portal skin, this file contains definitions for the portal skin, the window decorations that this skin provides and well as defining some javascript resources which are not related to the skin. The default portal skin doesn't directly define portlet skins, these should be provided by the portlets themeselves.

web.xml
: For the default portal skin, the web.xml of the eXoResources.war will contains a lot of information which is mostly irrelevant to the portal skining. The areas of interest in this file is the resourcerequestfilter and the fact that the display-name is set.

Stylesheet.css
: The main portal skin stylesheet. The file is the main entry point to the css class definitions for the skin. Below is shown the contents of this file:

```
@import url(DefaultSkin/portal/webui/component/UIPortalApplicationSkin.css);  (1)
```

```
@import url(DefaultSkin/webui/component/Stylesheet.css);   (2)
@import url(PortletThemes/Stylesheet.css);                 (3)
@import url(Portlet/Stylesheet.css);
```

1. Skin for the main portal page.
2. Skins for various portal components.
3. Window decoration skins.
4. The portlet specificiation css classes.

Instead of defining all the CSS classes in this one file we are instead importing other css stylesheet files, some of which may also import other CSS stylesheets. The css classes are split up between multiple files to make it easier for new skins to reuse parts of the default skin.

To reuse a CSS stylesheet from the default portal skin you would need to reference the default skin from eXoResources. For example, to include the window decorators from the default skin within a new portal skin you would need to use this import:

```
@import url(/eXoResources/skin/Portlet/Stylesheet.css);
```

Note

When the portal skin is added to the page, it merge all the css stylesheets into a single file.

3.1.7. Creating New Skins

3.1.7.1. Creating a New Portal Skin

A new portal will need to be added to the portal through the skin service. As such the web application which contains the skin will need to be properly configured for the skin service to discover them. This means properly configuring the ResourceRequestFilter and gatein-resources.xml.

3.1.7.1.1. Portal Skin Configuration

The gatein-resources.xml will need to specify the new portal skin. This will include specifying the name of the new skin, where to locate its css stylesheet file and whether to overwrite an existing portal theme with the same name.

```
<gatein-resources>
  <portal-skin>
```

```
    <skin-name>MySkin</skin-name>
    <css-path>/skin/myskin.css</css-path>
    <overwrite>false</overwrite>
  </portal-skin>
</gatein-resources>
```

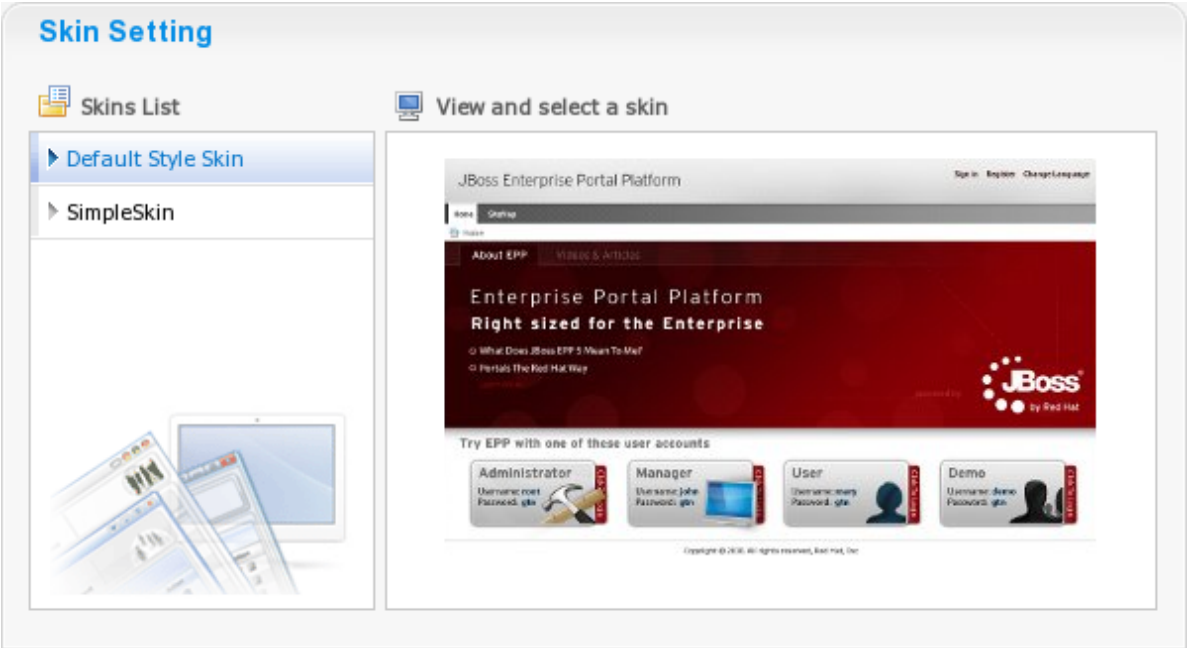
The default portal skin and window styles are defined in `01eXoResources.war/WEB-INF/gatein-resources.xml`.

Note

The css for the portal skin needs to contain the css for all the window decorations and the portlet specification css classes.

3.1.7.1.2. Portal Skin Preview Icon

When selecting a skin it is possible to see a preview of what the skin will look like. The current skin needs to know about the skin icons for all the available skins, otherwise it will not be able to show the previews. When creating a new portal it is recommended to include the preview icons of the other skins and to update the other skins with your new portal skin preview.



The portal skin preview icon is specified through the CSS of the portal skin. In order for the current portal skin to be able to display the preview it must specify a specific CSS class and set the icon as the background.

For a portal named **MySkin** in must define the following CSS class:

.UIChangeSkinForm .UIItemSelector .TemplateContainer .**MySkinImage**

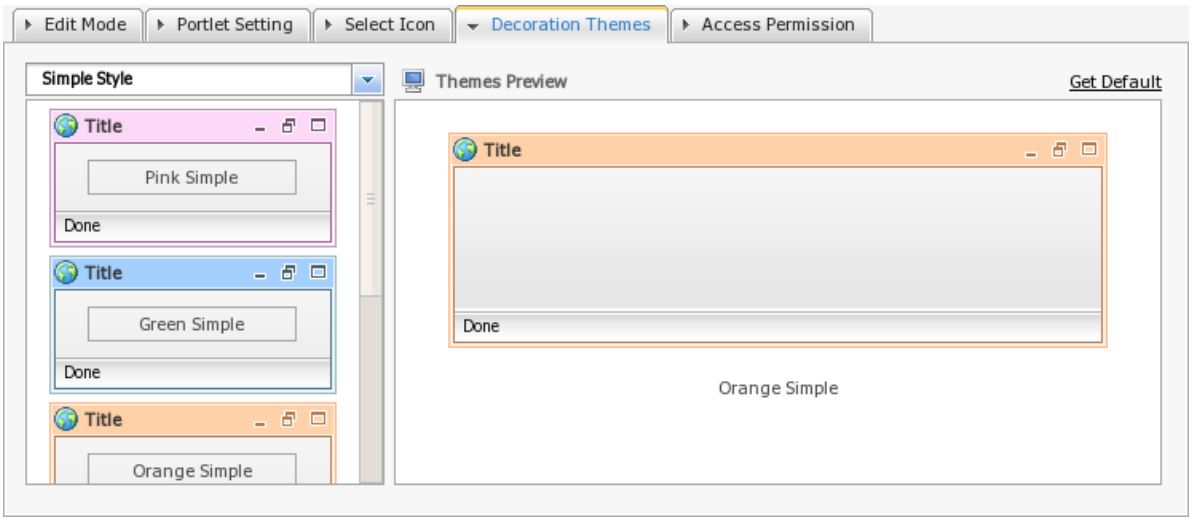
In order for the default skin to know about the skin icon for a new portal skin, the preview screenshot needs to be place in:
`01eXoResources.war:/skin/DefaultSkin/portal/webui/component/customization/UIChangeSkinForm/background`

The CSS stylesheet for the default portal needs to have the following updated with the preview icon css class. For a skin named **MySkin** then the following needs to be updated:
`01eXoResources.war:/skin/DefaultSkin/portal/webui/component/customization/UIChangeSkinForm/Stylesheet.css`

```
.UIChangeSkinForm .UIItemSelector .TemplateContainer .MySkinImage {
  margin: auto;
  width: 329px; height:204px;
  background: url('background/MySkin.jpg') no-repeat top;
  cursor: pointer ;
}
```

3.1.7.2. Creating a New Window Style

Window styles are the CSS applied to window decoration. When an administrator choose a new application to add on a page he can decide which style of decoration would go around the window if any.



3.1.7.2.1. Window Style Configuration

Window Styles are defined within a gatein-resources.xml file which is used by the skin service to deploy the window style into the portal. Window styles can belong in with a window style category, this category and the window styles will need to be specified in resources file.

The following gatein-resource.xml fragment will add MyThemeBlue and MyThemeRed to the MyTheme category.

```
<window-style>
  <style-name>MyTheme</style-name>
  <style-theme>
    <theme-name>MyThemeBlue</theme-name>
  </style-theme>
  <style-theme>
    <theme-name>MyThemeRed</theme-name>
  </style-theme>
</window-style>
```

The windows style configuration for the default skin is configured in:
`01eXoResources.war/WEB-INF/gatein-resources.xml`

Note

When a window style is defined in gatein-resources.xml file, it will be available to all portlets regardless if the current portal skin support the window decorator or not. It is recommended that when a new window decorator is added that it is added to all portal skins or that portal skins share a common stylesheet for window decorators.

3.1.7.2.2. Window Style CSS

In order for the skin service to display the window decorators, it must have CSS classes with specific naming in relation to the window style name. The service will try and display css based on this naming. The css class must be included as part of the current portal skin for the window decorators to be displayed.

The location of the window decorator css classes for the default portal theme is located at:
`01eXoResources.war/skin/PortletThemes/Stylesheet.css`

Create the CSS file:

```
/*---- MyTheme ----*/
```

```
.MyTheme .WindowBarCenter .WindowPortletInfo {
 margin-right: 80px; /* orientation=lt */
 margin-left: 80px; /* orientation=rt */
}

.MyTheme .WindowBarCenter .ControlIcon {
 float: right; /* orientation=lt */
 float: left; /* orientation=rt */
 width: 24px;
 height: 17px;
 cursor: pointer;
 background-image: url('background/MyTheme.png');
}

.MyTheme .ArrowDownIcon {
 background-position: center 20px;
}

.MyTheme .OverArrowDownIcon {
 background-position: center 116px;
}

.MyTheme .MinimizedIcon {
 background-position: center 44px;
}

.MyTheme .OverMinimizedIcon {
 background-position: center 140px;
}

.MyTheme .MaximizedIcon {
 background-position: center 68px;
}

.MyTheme .OverMaximizedIcon {
 background-position: center 164px;
}

.MyTheme .RestoreIcon {
 background-position: center 92px;
}

.MyTheme .OverRestoreIcon {
 background-position: center 188px;
```

```
}

.MyTheme .NormalIcon {
 background-position: center 92px;
}

.MyTheme .OverNormalIcon {
 background-position: center 188px;
}

.MyTheme .Information {
 height: 18px; line-height: 18px;
 vertical-align: middle; font-size: 10px;
 padding-left: 5px; /* orientation=lt */
 padding-right: 5px; /* orientation=rt */
 margin-right: 18px; /* orientation=lt */
 margin-left: 18px; /* orientation=rt */
}

.MyTheme .WindowBarCenter .WindowPortletIcon {
 background-position: left top; /* orientation=lt */
 background-position: right top; /* orientation=rt */
 padding-left: 20px; /* orientation=lt */
 padding-right: 20px; /* orientation=rt */
 height: 16px;
 line-height: 16px;
}

.MyTheme .WindowBarCenter .PortletName {
 font-weight: bold;
 color: #333333;
 overflow: hidden;
 white-space: nowrap;
}

.MyTheme .WindowBarLeft {
 padding-left: 12px;
 background-image: url('background/MyTheme.png');
 background-repeat: no-repeat;
 background-position: left -148px;
}

.MyTheme .WindowBarRight {
 padding-right: 11px;
```

```
 background-image: url('background/MyTheme.png');
 background-repeat: no-repeat;
 background-position: right -119px;
}

.MyTheme .WindowBarCenter {
 background-image: url('background/MyTheme.png');
 background-repeat: repeat-x;
 background-position: left -90px;
 height: 21px;
 padding-top: 8px;
}

.MyTheme .MiddleDecoratorLeft {
 padding-left: 12px;
 background: url('background/MMyTheme.png') repeat-y left;
}

.MyTheme .MiddleDecoratorRight {
 padding-right: 11px;
 background: url('background/MMyTheme.png') repeat-y right;
}

.MyTheme .MiddleDecoratorCenter {
 background: #ffffff;
}

.MyTheme .BottomDecoratorLeft {
 padding-left: 12px;
 background-image: url('background/MyTheme.png');
 background-repeat: no-repeat;
 background-position: left -60px;
}

.MyTheme .BottomDecoratorRight {
 padding-right: 11px;
 background-image: url('background/MyTheme.png');
 background-repeat: no-repeat;
 background-position: right -30px;
}

.MyTheme .BottomDecoratorCenter {
 background-image: url('background/MyTheme.png');
 background-repeat: repeat-x;
```

```
 background-position: left top;
 height: 30px;
}
```

3.1.7.2.3. How to Set the Default Window Style

To set the default window style to be used for a portal, you will to specify the css classes for a theme called `DefaultTheme`.

Note

You do not need to specify the DefaultTheme in gatein-resources.xml

3.1.7.3. How to Create New Portlet skins

Portlets often require additional styles that may not be defined by the portal skin. GateIn 3.2 allows portlets to define additional stylesheets for each portlet and will append the corresponding `link` tags to the `head`.

The link ID will be of the form *`{portletAppName}{PortletName}`*. For example: `ContentPortlet` in `content.war`, will give *`id="contentContentPortlet"`*

To define a new CSS file to include whenever a portlet is available on a portal page, the following fragment needs to be added in gatein-resources.xml

```
<portlet-skin>
  <application-name>portletAppName</application-name>
  <portlet-name>PortletName</portlet-name>
  <skin-name>Default</skin-name>
  <css-path>/skin/DefaultStylesheet.css</css-path>
</portlet-skin>

<portlet-skin>
  <application-name>portletAppName</application-name>
  <portlet-name>PortletName</portlet-name>
  <skin-name>OtherSkin</skin-name>
  <css-path>/skin/OtherSkinStylesheet.css</css-path>
</portlet-skin>
```

This will load the DefaultStylesheet.css when the Default skin is used and the OtherSkinStylesheet.css when the OtherSkin is used.

Note

If the current portal skin is not defined as part of the supported skins, then the portlet css class will not be loaded. It is recommended to update portlet skins whenever a new portal skin is created.

3.1.7.3.1. Change portlet icons

Each portlet can be represented by an unique icon that you can see in the portlet registry or page editor. This icon can be changed by adding an image to the directory of the portlet webapplication:

- `skin/DefaultSkin/portletIcons/`*`icon_name.png`*.

To be used correctly the icon must be named after the portlet.

For example, the icon for an account portlet named AccountPortlet would be located at:

- `skin/DefaultSkin/portletIcons/AccountPortlet.png`

Note

You must use `skin/DefaultSkin/portletIcons/` for the directory to store the portlet icon regardless of what skin is going to be used.

3.1.7.4. How to create a new Portlet Specification CSS Classes

The portlet specification defines a set of default css classes that should be available for portlets. These classes are included as part of the portal skin. Please see the portlet specification for a list of the default classes that should be available.

For the default portal skin, the portlet specification CSS classes are defined in : `eXoResources.war/skin/Portlet/Stylesheet.css`

3.1.8. Tips and Tricks

3.1.8.1. Easier css debugging

By default, CSS files are cached and their imports are merged into a single CSS file at the server side. This reduces the number of HTTP requests from the browser to the server.

The optimization code is quite simple as all the CSS files are parsed at the server startup time and all the @import and url(...) references are rewritten to support a single flat file. The result is stored in a cache directly used from the `ResourceRequestFilter`.

Although the optimization is useful for a production environments, it may be easier to deactivate this optimization while debugging stylesheets. To do so, set the java system property `exo.product.developing` to `true`.

For example, the property can be passed as a JVM parameter with `-D` option when running GateIn.

```
sh $JBOSS_HOME/bin/run.sh -Dexo.product.developing=true
```

1. warning("This option may cause display bugs with certain browsers like Internet Explorer")

3.1.8.2. Some CSS techniques

It is recommended that users have some experience with CSS before studying GateIn 3.2 CSS.

GateIn 3.2 relies heavily on CSS to create the layout and effects for the UI. Some common techniques for customizing GateIn 3.2 CSS are explained below.

3.1.8.2.1. Decorator pattern

The decorator is a pattern to create a contour or a curve around an area. In order to achieve this effect you need to create 9 cells. The BODY is the central area that you want to decorate. The other 8 cells are distributed around the BODY cell. You can use the width, height and background image properties to achieve any decoration effect that you want.

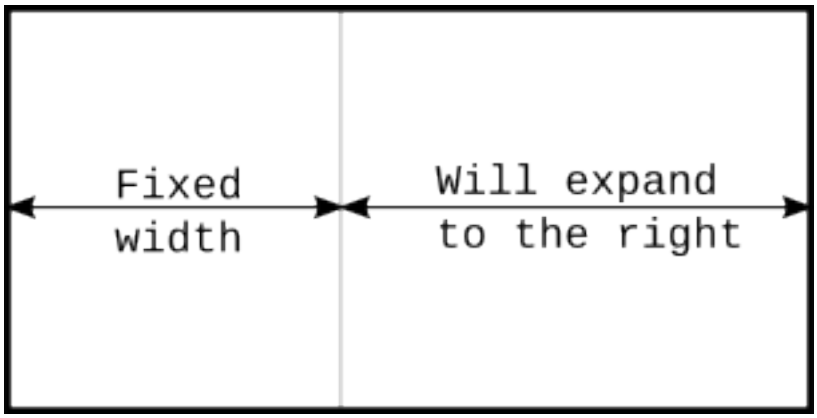
TopLeft	TopCenter	TopRight
CenterLeft	BODY	CenterRight
BottomLeft	BottomCenter	BottomRight

```
<div class="Parent">
  <div class="TopLeft">
    <div class="TopRight">
      <div class="TopCenter"><span></span></div>
    </div>
  </div>
  <div class="CenterLeft">
```

```
    <div class="CenterRight">
      <div class="CenterCenter">BODY</div>
    </div>
  </div>
  <div class="BottomLeft">
    <div class="BottomRight">
      <div class="BottomCenter"><span></span></div>
    </div>
  <div>
</div>
```

3.1.8.2.2. Left margin left pattern

Left margin left pattern is a technique to create 2 blocks side by side. The left block will have a fixed size and the right block will take the rest of the available space. When the user resizes the browser the added or removed space will be taken from the right block.




```
<div class="Parent">
  <div style="float: left; width: 100px">
  </div>
  <div style="margin-left: 105px;">
  <div>
  <div style="clear: left"><span></span></div>
</div>
```

3.2. Portal Lifecycle

3.2.1. Overview

This chapter describes the portal lifecycle from the application server start to its stop as well as how requests are handled.

3.2.2. Application Server start and stop

A portal instance is simply a web application deployed as a WAR in an application server. Portlets are also part of an enhanced WAR called a portlet application.

GateIn 3.2 doesn't require any particular setup for your portlet in most common scenarios and the `web.xml` file can remain without any GateIn 3.2 specific configuration.

During deployment, GateIn 3.2 will automatically and transparently inject a servlet into the portlet application to be able to interact with it. This feature is dependent on the underlying servlet container but will work out of the box on the proposed bundles.

3.2.3. The Command Servlet

The servlet is the main entry point for incoming requests, it also includes some init code when the portal is launched. This servlet (`org.gatein.wci.command.CommandServlet`) is automatically added during deployment and mapped to `/tomcatgateinservlet`.

This is equivalent to adding the following into `web.xml`.

Note

As the servlet is already configured this example is for information only.

```
<servlet>
  <servlet-name>TomcatGateInServlet</servlet-name>
  <servlet-class>org.gatein.wci.command.CommandServlet</servlet-class>
  <load-on-startup>0</load-on-startup>
</servlet>

<servlet-mapping>
  <servlet-name>TomcatGateInServlet</servlet-name>
  <url-pattern>/tomcatgateinservlet</url-pattern>
</servlet-mapping>
```

It is possible to filter on the CommandServlet by filtering the URL pattern used by the Servlet mapping.

The example below would create a servlet filter that calculates the time of execution of a portlet request.

The filter class:

```
package org.example;

import java.io.IOException;

import javax.servlet.FilterChain;
import javax.servlet.FilterConfig;
import javax.servlet.ServletException;
import javax.servlet.ServletRequest;
import javax.servlet.ServletResponse;

public class MyFilter implements javax.servlet.Filter {

  public void doFilter(ServletRequest request, ServletResponse response,
      FilterChain chain) throws IOException, ServletException
  {
    long beforeTime = System.currentTimeMillis();
    chain.doFilter(request, response);
    long afterTime = System.currentTimeMillis();
    System.out.println("Time to execute the portlet request (in ms): " + (afterTime - beforeTime));
  }

  public void init(FilterConfig config) throws ServletException
  {
  }

  public void destroy()
  {
  }

}
```

The Java EE web application configuration file (`web.xml`) of the portlet on which we want to know the time to serve a portlet request. As mentioned above nothing specific to GateIn 3.2 needs to be included, only the URL pattern to set has to be known.

```
<?xml version="1.0"?>
<web-app 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="2.5">
```

```
  <filter>
    <filter-name>MyFilter</filter-name>
    <filter-class>org.example.MyFilter</filter-class>
  </filter>

  <filter-mapping>
    <filter-name>MyFilter</filter-name>
    <url-pattern>/tomcatgateinservlet</url-pattern>
    <dispatcher>INCLUDE</dispatcher>
  </filter-mapping>

</web-app>
```

INCLUDE dispatcher

It is important to set `INCLUDE` as dispatcher as the portal will always hit the CommandServlet through a request dispatcher. Without this, the filter will not be triggered, unless direct access to a resource (such as an image).

3.3. Default Portal Configuration

3.3.1. Overview

GateIn 3.2 default home page URL is `http://{hostname}:{port}/portal/`. There may be multiple independent portals deployed in parallel at any given time, each of which has its root context (i.e.: `http://{hostname}:{port}/sample-portal/`). Each portal is internally composed of one or more, what we again call 'portals'. There needs to be at least one such portal - the default one is called 'classic'. When accessing GateIn 3.2 default home page URL, you are automatically redirected to 'classic' portal. The default portal performs another important task. When starting up GateIn 3.2 for the first time, its JCR database will be empty (that's where portals keep their runtime-configurable settings). It's the default portal that's used to detect this, and to trigger automatic data initialization.

3.3.2. Configuration

The following example configuration can be found at: "`02portal.war:/WEB-INF/conf/portal/portal-configuration.xml`".

```
<component>
   <key>org.exoplatform.portal.config.UserPortalConfigService</key>
   <type>org.exoplatform.portal.config.UserPortalConfigService</type>
```

```
  <component-plugins>
   <component-plugin>
    <name>new.portal.config.user.listener</name>
    <set-method>initListener</set-method>
    <type>org.exoplatform.portal.config.NewPortalConfigListener</type>
    <description>this listener init the portal configuration</description>
    <init-params>
     <value-param>
      <name>default.portal</name>
      <description>The default portal for checking db is empty or not</description>
      <value>classic</value>
     </value-param>
     ...
    </init-params>
   </component-plugin>
  </component-plugins>
</component>
```

In this example the **classic** portal has been set as the default.

Note

Components, component-plugins, and init-params are explained in Foundations chapter. For now just note how `NewPortalConfigListener` component-plugin is used to add configuration to `UserPortalConfigService`, which is designed in this way to allow other components to add configuration to it.

3.4. Portal Default Permission Configuration

3.4.1. Overview

The default permission configuration for the portal is defined through `org.exoplatform.portal.config.UserACL` component configuration in the file `02portal.war:/WEB-INF/conf/portal/portal-configuration.xml`.

It defines 8 permissions types:

super.user
: The super user has all the rights on the platform, this user is referred to as *root*.

portal.administrator.groups
: Any member of those groups are considered administrators. Default value is `/platform/administrators`.

portal.administrator.mstype
: Any user with that membership type would be considered administrator or the associated group. Default value is `manager`.

portal.creator.groups
: This list defines all groups that will be able to manage the different portals. Members of this group also have the permission to create new portals. The format is `membership:/group/subgroup`.

navigation.creator.membership.type
: Defines the membership type of group managers. The group managers have the permission to create and edit group pages and they can modify the group navigation.

guests.group
: Any anonymous user automatically becomes a member of this group when they enter the public pages.

mandatory.groups
: Groups that can't be deleted.

mandatory.mstypes
: Membership types that can't be deleted.

```
<component>
  <key>org.exoplatform.portal.config.UserACL</key>
  <type>org.exoplatform.portal.config.UserACL</type>
  <init-params>
    <value-param>
      <name>super.user</name>
      <description>administrator</description>
      <value>root</value>
    </value-param>

    <value-param>
      <name>portal.creator.groups</name>
      <description>groups with membership type have permission to manage portal</description>
      <value>*:/platform/administrators,*:/organization/management/executive-board</value>
    </value-param>

    <value-param>
      <name>navigation.creator.membership.type</name>
          <description>specific membership type have full permission with group navigation</
description>
      <value>manager</value>
    </value-param>
    <value-param>
```

```
    <name>guests.group</name>
    <description>guests group</description>
    <value>/platform/guests</value>
   </value-param>
   <value-param>
    <name>access.control.workspace</name>

 <description>groups with memberships that have the right to access the User Control Workspace</
description>
    <value>*:/platform/administrators,*:/organization/management/executive-board</value>
   </value-param>
  </init-params>
</component>
```

3.4.2. Overwrite Portal Default Permissions

When creating custom portals and portal extensions it's possible to override the default configuration by using `org.exoplatform.portal.config.PortalACLPlugin`, configuring it as an external-plugin of `org.exoplatform.portal.config.UserACL` service:

```
<external-component-plugins>
   <target-component>org.exoplatform.portal.config.UserACL</target-component>
   <component-plugin>
    <name>addPortalACLPlugin</name>
    <set-method>addPortalACLPlugin</set-method>
    <type>org.exoplatform.portal.config.PortalACLPlugin</type>
    <description>setting some permission for portal</description>
    <init-params>
     <values-param>
      <name>access.control.workspace.roles</name>
      <value>*:/platform/administrators</value>
      <value>*:/organization/management/executive-board</value>
     </values-param>
     <values-param>
      <name>portal.creation.roles</name>
      <value>*:/platform/administrators</value>
      <value>*:/organization/management/executive-board</value>
     </values-param>
    </init-params>
   </component-plugin>
 </external-component-plugins>
```

3.5. Portal Navigation Configuration

3.5.1. Overview

There are three navigation types available to portal users:

- *Section 3.5.2, “Portal Navigation”*
- *Section 3.5.3, “Group Navigation”*
- *Section 3.5.4, “User Navigation”*

These navigations are configured using the standard XML syntax in the file; "`02portal.war:/WEB-INF/conf/portal/portal-configuration.xml`".

```
<component>
  <key>org.exoplatform.portal.config.UserPortalConfigService</key>
  <type>org.exoplatform.portal.config.UserPortalConfigService</type>
  <component-plugins>
    <component-plugin>
      <name>new.portal.config.user.listener</name>
      <set-method>initListener</set-method>
      <type>org.exoplatform.portal.config.NewPortalConfigListener
    </type>
      <description>this listener init the portal configuration
    </description>
      <init-params>
        <value-param>
          <name>default.portal</name>
          <description>The default portal for checking db is empty or not</description>
          <value>classic</value>
        </value-param>
        <value-param>
          <name>page.templates.location</name>
          <description>the path to the location that contains Page templates</description>
          <value>war:/conf/portal/template/pages</value>
        </value-param>
        <value-param>
          <name>override</name>

 <description>The flag parameter to decide if portal metadata is overriden on restarting server
        </description>
          <value>false</value>
        </value-param>
        <object-param>
```

```
      <name>site.templates.location</name>
      <description>description</description>
      <object type="org.exoplatform.portal.config.SiteConfigTemplates">
        <field name="location">
          <string>war:/conf/portal</string>
        </field>
        <field name="portalTemplates">
          <collection type="java.util.HashSet">
            <value><string>basic</string></value>
            <value><string>classic</string></value>
          </collection>
        </field>
        <field name="groupTemplates">
          <collection type="java.util.HashSet">
            <value><string>group</string></value>
          </collection>
        </field>
        <field name="userTemplates">
          <collection type="java.util.HashSet">
            <value><string>user</string></value>
          </collection>
        </field>
      </object>
    </object-param>
    <object-param>
      <name>portal.configuration</name>
      <description>description</description>
      <object type="org.exoplatform.portal.config.NewPortalConfig">
        <field name="predefinedOwner">
          <collection type="java.util.HashSet">
            <value><string>classic</string></value>
          </collection>
        </field>
        <field name="ownerType">
          <string>portal</string>
        </field>
        <field name="templateLocation">
          <string>war:/conf/portal/</string>
        </field>
        <field name="importMode">
          <string>conserve</string>
        </field>
      </object>
    </object-param>
```

```
        <object-param>
          <name>group.configuration</name>
          <description>description</description>
          <object type="org.exoplatform.portal.config.NewPortalConfig">
            <field name="predefinedOwner">
              <collection type="java.util.HashSet">
                <value><string>/platform/administrators</string></value>
                <value><string>/platform/users</string></value>
                <value><string>/platform/guests</string></value>
                <value><string>/organization/management/executive-board</string></value>
              </collection>
            </field>
            <field name="ownerType">
              <string>group</string>
            </field>
            <field name="templateLocation">
              <string>war:/conf/portal</string>
            </field>
            <field name="importMode">
              <string>conserve</string>
            </field>
          </object>
        </object-param>
        <object-param>
          <name>user.configuration</name>
          <description>description</description>
          <object type="org.exoplatform.portal.config.NewPortalConfig">
            <field name="predefinedOwner">
              <collection type="java.util.HashSet">
                <value><string>root</string></value>
                <value><string>john</string></value>
                <value><string>mary</string></value>
                <value><string>demo</string></value>
                <value><string>user</string></value>
              </collection>
            </field>
            <field name="ownerType">
              <string>user</string>
            </field>
            <field name="templateLocation">
              <string>war:/conf/portal</string>
            </field>
            <field name="importMode">
              <string>conserve</string>
```

```
            </field>
          </object>
        </object-param>
      </init-params>
    </component-plugin>
  </component-plugins>
</component>
```

This XML configuration defines where in the portal's war to look for configuration, and which portals, groups, and user specific views to include in `portal/group/user` navigation. Those files will be used to create an initial navigation when the portal is launched in the first time. That information will then be stored in the JCR content repository, and can then be modified and managed from the portal UI.

Each portal, groups and users navigation is indicated by a configuration paragraph, for example:

```
<object-param>
  <name>portal.configuration</name>
  <description>description</description>
  <object type="org.exoplatform.portal.config.NewPortalConfig">
    <field name="predefinedOwner">                          (1)
      <collection type="java.util.HashSet">
        <value><string>classic</string></value>
      </collection>
    </field>
    <field name="ownerType">                                (2)
      <string>portal</string>
    </field>
    <field name="templateLocation">                         (3)
      <string>war:/conf/portal/</string>
    </field>
    <field name="importMode">                               (4)
      <string>conserve</string>
    </field>
  </object>
</object-param>
```

(1) *predefinedOwner* define the navigation owner, portal will look for the configuration files in folder with this name, if there is no suiable folder, a default portal will be created with name is this value.

(2) *ownerType* define the type of portal navigation. It may be a portal, group or user

3. *templateLocation* the classpath where contains all portal configuration files
4. *importMode* The mode for navigation import. There are 4 types of import mode:

    - *conserve*: Import data when it does not exist, otherwise do nothing.
    - *insert*: Import data when it does not exist, otherwise performs a strategy that adds new data only.
    - *merge*: Import data when it does not exist, update data when it exists.
    - *rewrite*: Overwrite data whatsoever.

Base on these parameters, portal will look for the configuration files and create a relevant portal navigation, pages and data import strategy. The portal configuration files will be stored in folders with path look like `{templateLocation}/{ownerType}/{predefinedOwner}`, all navigations are defined in the `navigation.xml` file, pages are defined in pages.xml and portal configuration is defined in `{ownerType}.xml`. For example, with the above configuration, prtal will look for all configuration files from `war:/conf/portal/portal/classic path.`

3.5.2. Portal Navigation

The portal navigation incorporates the pages that can be accessed even when the user is not logged in assuming the applicable permissions allow the public access). For example, several portal navigations are used when a company owns multiple trademarks, and sets up a website for each of them.

The **classic** portal is configured by four XML files in the `02portal.war:/WEB-INF/conf/portal/portal/classic` directory:

portal.xml
: This file describes the layout and portlets that will be shown on all pages. The layout usually contains the banner, footer, menu and breadcrumbs portlets. GateIn 3.2 is extremely configurable as every view element (even the banner and footer) is a portlet.

```
<portal-config
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.gatein.org/xml/ns/gatein_objects_1_2     http://
www.gatein.org/xml/ns/gatein_objects_1_2"
  xmlns="http://www.gatein.org/xml/ns/gatein_objects_1_2">
  <portal-name>classic</portal-name>
  <locale>en</locale>
  <access-permissions>Everyone</access-permissions>
  <edit-permission>*:/platform/administrators</edit-permission>
  <properties>
    <entry key="sessionAlive">onDemand</entry>
    <entry key="showPortletInfo">1</entry>
```

```
</properties>

<portal-layout>
  <portlet-application>
    <portlet>
      <application-ref>web</application-ref>
      <portlet-ref>BannerPortlet</portlet-ref>
      <preferences>
        <preference>
          <name>template</name>
          <value>par:/groovy/groovy/webui/component/UIBannerPortlet.gtmpl</value>
          <read-only>false</read-only>
        </preference>
      </preferences>
    </portlet>
    <access-permissions>Everyone</access-permissions>
    <show-info-bar>false</show-info-bar>
  </portlet-application>

  <portlet-application>
    <portlet>
      <application-ref>web</application-ref>
      <portlet-ref>NavigationPortlet</portlet-ref>
    </portlet>
    <access-permissions>Everyone</access-permissions>
    <show-info-bar>false</show-info-bar>
  </portlet-application>

  <portlet-application>
    <portlet>
      <application-ref>web</application-ref>
      <portlet-ref>BreadcumbsPortlet</portlet-ref>
    </portlet>
    <access-permissions>Everyone</access-permissions>
    <show-info-bar>false</show-info-bar>
  </portlet-application>

  <page-body> </page-body>

  <portlet-application>
    <portlet>
      <application-ref>web</application-ref>
      <portlet-ref>FooterPortlet</portlet-ref>
      <preferences>
```

```
            <preference>
              <name>template</name>
              <value>par:/groovy/groovy/webui/component/UIFooterPortlet.gtmpl</value>
              <read-only>false</read-only>
            </preference>
          </preferences>
        </portlet>
        <access-permissions>Everyone</access-permissions>
        <show-info-bar>false</show-info-bar>
      </portlet-application>

    </portal-layout>

</portal-config>
```

It is also possible to apply a nested container that can also contain portlets. Row, column or tab containers are then responsible for the layout of their child portlets.

Each application references a portlet using the id `portal#{portalName}:/{portletWarName}/{portletName}/{uniqueId}`

Use the `page-body` tag to define where GateIn 3.2 should render the current page.

The defined **classic** portal is accessible to "Everyone" (at `/portal/public/classic`) but only members of the group `/platform/administrators` can edit it.

navigation.xml

This file defines all the navigation nodes of the portal. The syntax is simple using the nested node tags. Each node refers to a page defined in the `pages.xml` file (explained next).

If the administrator want to create node labels for each language, they will have to use `xml:lang` attribute in the label tag with value of `xml:lang` is the relevant locale.

Otherwise, if they want the node label is localized by resource bundle files, the `#{...}` syntax will be used, the enclosed property name serves as a key that is automatically passed to the internationalization mechanism. Thus the literal property name is replaced by a localized value taken from the associated properties file matching the current locale.

For example:

```
<node-navigation
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:schemaLocation="http://www.gatein.org/xml/ns/gatein_objects_1_2     http://
www.gatein.org/xml/ns/gatein_objects_1_2"
  xmlns="http://www.gatein.org/xml/ns/gatein_objects_1_2">
```

```
    <priority>1</priority>
    <page-nodes>
      <node>
        <name>home</name>
        <label xml:lang="en">Home</label>
        <page-reference>portal::classic::homepage</page-reference>
      </node>
      <node>
        <name>sitemap</name>
        <label xml:lang="en">SiteMap</label>
        <visibility>DISPLAYED</visibility>
        <page-reference>portal::classic::sitemap</page-reference>
      </node>
      .....
    </page-nodes>
  </node-navigation>
```

This navigation tree can have multiple views inside portlets (such as the breadcrumbs portlet) that render the current view node, the site map or the menu portlets.

pages.xml

This configuration file structure is very similar to `portal.xml` and it can also contain container tags. Each application can decide whether to render the portlet border, the window state, the icons or portlet's mode.

```
<page-set
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:schemaLocation="http://www.gatein.org/xml/ns/gatein_objects_1_2     http://
www.gatein.org/xml/ns/gatein_objects_1_2"
  xmlns="http://www.gatein.org/xml/ns/gatein_objects_1_2">

  <page>
    <name>homepage</name>
    <title>Home Page</title>
    <access-permissions>Everyone</access-permissions>
    <edit-permission>*:/platform/administrators</edit-permission>
    <portlet-application>
      <portlet>
        <application-ref>web</application-ref>
        <portlet-ref>HomePagePortlet</portlet-ref>
        <preferences>
          <preference>
            <name>template</name>
```

```
            <value>system:/templates/groovy/webui/component/UIHomePagePortlet.gtmpl</
value>
            <read-only>false</read-only>
          </preference>
        </preferences>
      </portlet>
      <title>Home Page portlet</title>
      <access-permissions>Everyone</access-permissions>
      <show-info-bar>false</show-info-bar>
      <show-application-state>false</show-application-state>
      <show-application-mode>false</show-application-mode>
    </portlet-application>
  </page>

  <page>
    <name>sitemap</name>
    <title>Site Map</title>
    <access-permissions>Everyone</access-permissions>
    <edit-permission>*:/platform/administrators</edit-permission>
    <portlet-application>
      <portlet>
        <application-ref>web</application-ref>
        <portlet-ref>SiteMapPortlet</portlet-ref>
      </portlet>
      <title>SiteMap</title>
      <access-permissions>Everyone</access-permissions>
      <show-info-bar>false</show-info-bar>
    </portlet-application>
  </page>
  .....
</page-set>
```

3.5.3. Group Navigation

Group navigations are dynamically added to the user navigation at login. This allows users to see the menu of all pages assigned to any groups they belong to.

The group navigation menu is configured by three XML files (`navigation.xml`, `pages.xml` and `portlet-preferences.xml`). The syntax used in these files is the same as those covered in *Section 3.5.2, "Portal Navigation"*.

They are also located in the `{templateLocation}/{ownerType}/{predefinedOwner}` directory with `ownerType` is `group` and `predefinedOwner` is the path to the group. For example, `portal.war/WEB-INF/conf/portal/group/platform/administrators/`.

3.5.4. User Navigation

User navigation is the set of nodes and pages that are owned by the user. They are part of the user's dashboard.

Three files configure the user navigation (`navigation.xml`, `pages.xml` and `portlet-preferences.xml`). They are located in the `{templateLocation}/{ownerType}/{predefinedOwner}` directory with `ownerType` is `user` and `predefinedOwner` is username that want to create the navigation. For example, if administrator want to create navigation for user `root`, he has to locate the configuration files in `portal.war/WEB-INF/conf/portal/user/root`

3.6. Data Import Strategy

3.6.1. Introduction

In the Portal extension mechanism, developers can define an extension that Portal data can be customized by configurations in the extension. There are several cases which an extension developer wants to define how to customize the Portal data, for example modifying, overwriting or just inserting a bit into the data defined by the portal. Therefore, GateIn also defines several modes for each case and the only thing which a developer has to do is to clarify the usecase and reasonably configure extensions.

This section shows you how data are changes in each mode.

3.6.2. Import Mode

In this section, the following modes for the import strategy are introduced:

- `CONSERVE`
- `MERGE`
- `INSERT`
- `OVERWRITE`

Each mode indicates how the Portal data are imported. The import mode value is set whenever NewPortalConfigListener is initiated. If the mode is not set, the default value will be used in this case. The default value is configurable as a UserPortalConfigService initial param. For example, the bellow configuration means that default value is `MERGE`

```
<component>
  <key>org.exoplatform.portal.config.UserPortalConfigService</key>
  <type>org.exoplatform.portal.config.UserPortalConfigService</type>
```

```
  <component-plugins>
  .....
  </component-plugins>
  <init-params>
    <value-param>
      <name>default.import.mode</name>
      <value>merge</value>
    </value-param>
  </init-params>
</component>
```

The way that the import strategy works with the import mode will be clearly demonstrated in next sections for each type of data.

3.6.3. Data Import Strategy

The 'Portal Data' term which has been referred in the previous sections can be classified into three types of object data: Portal Config, Page Data and Navigation Data; each of which has some differences in the import strategy.

3.6.3.1. Navigation Data

The navigation data import strategy will be processed to the import mode level as the followings:

- `CONSERVE`: If the navigation exists, leave it untouched. Otherwise, import data.
- `INSERT`: Insert the missing description data, but add only new nodes. Other modifications remains untouched.
- `MERGE`: Merge the description data, add missing nodes and update same name nodes.
- `OVERWRITE`: Always destroy the previous data and recreate it.

In the GateIn navigation structure, each navigation can be referred to a tree which each node links to a page content. Each node contains some description data, such as label, icon, page reference, and more. Therefore, GateIn provides a way to insert or merge new data to the initiated navigation tree or a sub-tree.

The merge strategy performs the recursive comparison of child nodes between the existing persistent nodes of a navigation and the transient nodes provided by a descriptor:

1. Start with the root nodes (which is the effective root node or another node if the parent URI is specified).

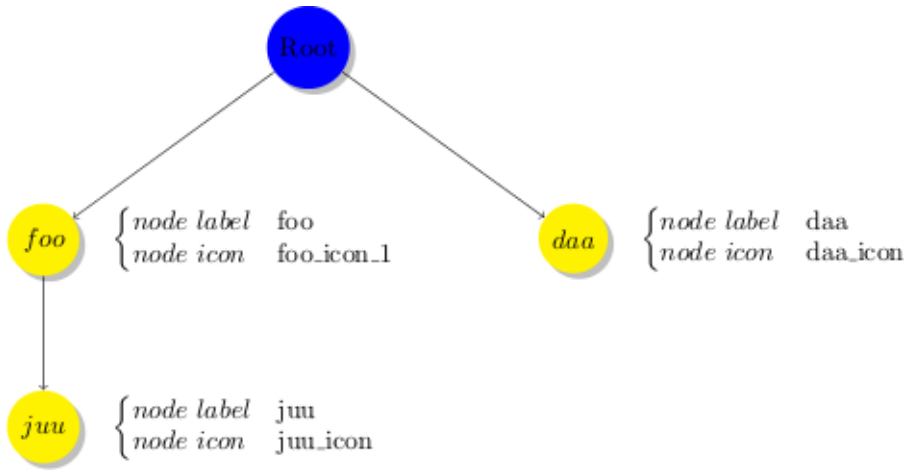
2. Compare the set of child nodes and insert the missing nodes in the persistent nodes.

3. Proceed recursively for each child having the same name.

Let's see the example with two navigation nodes in each import mode. In this case, there are 2 navigation definitions:

```
<node-navigation>
 <page-nodes>
  <node>
   <name>foo</name>
   <icon>foo_icon_1</icon>
   <node>
    <name>juu</name>
    <icon>juu_icon</icon>
   </node>
  </node>
  <node>
   <name>daa</name>
   <icon>daa_icon</icon>
  </node>
 </page-nodes>
</node-navigation>
```

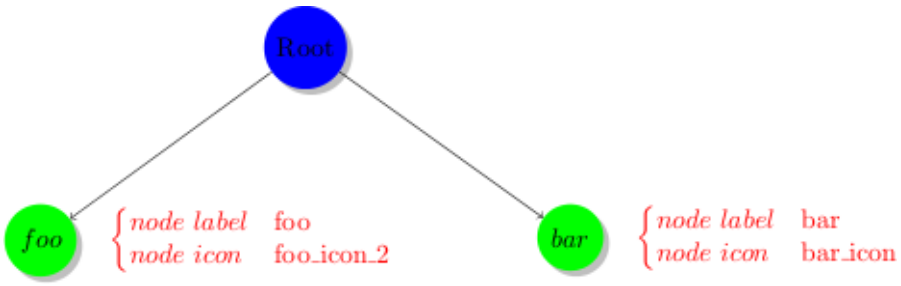
Navigation node tree hierarchy




```
<node-navigation>
 <page-nodes>
  <node>
   <name>foo</name>
   <icon>foo_icon_2</icon>
  </node>
```

```
    <node>
      <name>bar</name>
      <icon>bar_icon</icon>
    </node>
  </page-nodes>
</node-navigation>
```

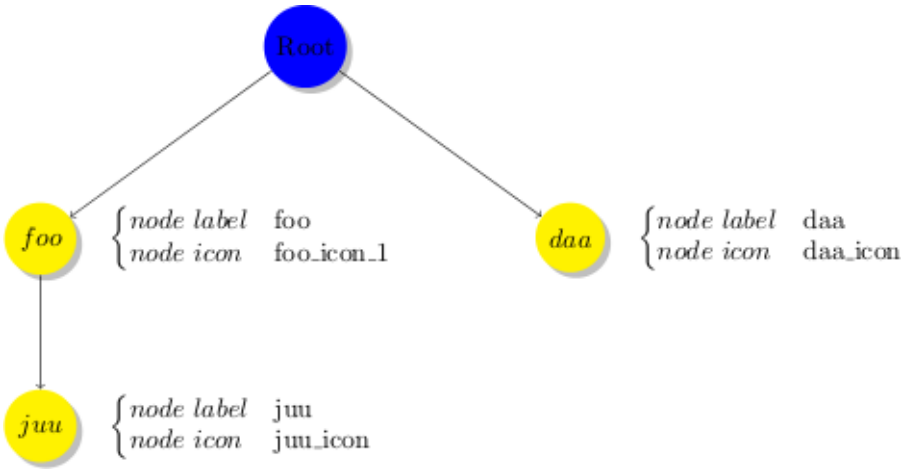
Navigation node tree hierarchy



For example, the *navigation1* is loaded before *navigation2*. The Navigation Importer processes on two navigation definitions, depending on the Import Mode defined in portal configuration.

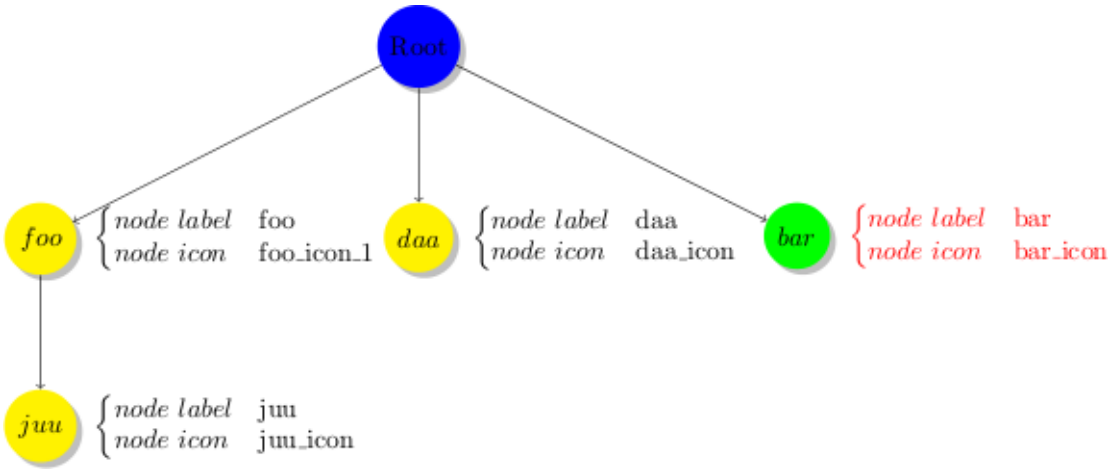
- Case 1: Import mode is `CONSERVE`.

  With the `CONSERVE` mode, data are only imported when they do not exist. So, if the navigation has been created by the *navigation1* definition, the *navigation2* definition does not affect anything on it. We have the result as following



- Case 2: Import mode is `INSERT`.

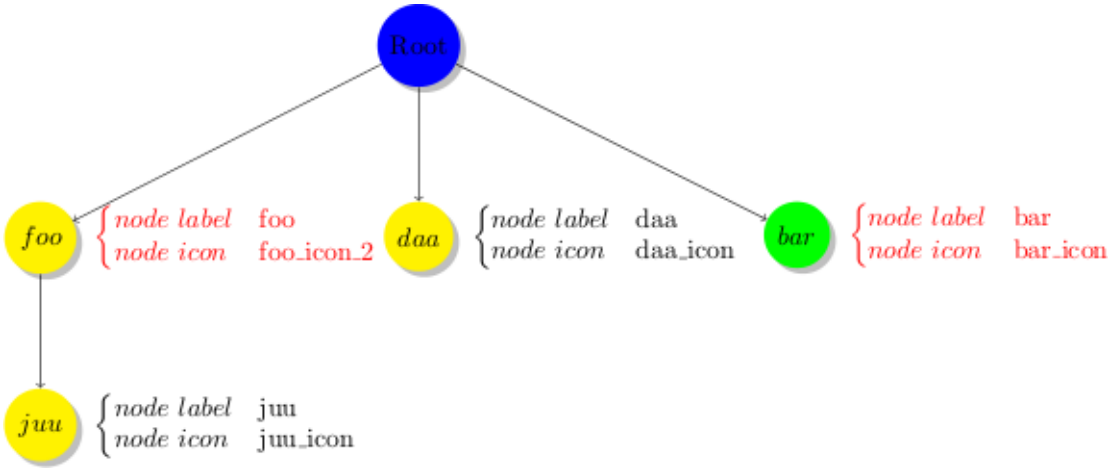
  If a node does not exist, the importer will add new nodes to the navigation tree. You will see the following result:



Hereafter, the node 'bar' is added to the navigation tree, because it does not exist in the initiated data. Other nodes are kept in the import process.

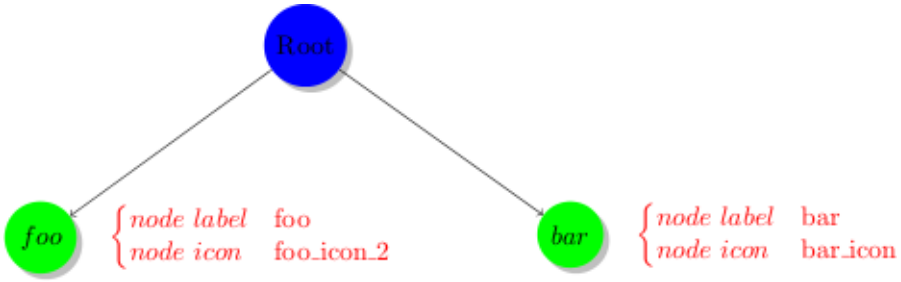
- Case 3: Import mode is `MERGE`.

  The `MERGE` mode indicates that a new node is added to the navigation tree, and updates the node data (such node label and node icon in the example) if it exists.



- Case 4: Import mode is `OVERWRITE`.

  Everything will be destroyed and replaced with new data if the `OVERWRITE` mode is used.



3.6.3.2. Portal Config

PortalConfig defines the portal name, permission, layout and some properties of a site. These information are configured in the *portal.xml*, *group.xml* or *user.xml*, depending on the site type. The PortalConfig importer performs a strategy that is based on the mode defined in NewPortalConfigListener, including `CONSERVE`, `INSERT`, `MERGE` or `OVERWRITE`. Let's see how the import mode affects in the process of portal data performance:

- `CONSERVE`: There is nothing to be imported. The existing data will be kept without any changes.
- `INSERT`: When the portal config does not exist, create the new portal defined by the portal config definition. Otherwise, do nothing.
- `MERGE` and `OVERWRITE` have the same behavior. The new portal config will be created if it does not exist or update portal properties defined by the portal config definition.

3.6.3.3. Page Data

The import mode affects the page data import as the same as Portal Config.

Note

If the Import mode is `CONSERVE` or `INSERT`, the data import strategy always performs as the `MERGE` mode in the first data initialization of the Portal.

3.7. Internationalization Configuration

3.7.1. Overview

Assumed Knowledge

GateIn 3.2 is fully configurable for internationalization, however users should have a general knowledge of Internationalization in Java products before attempting these configurations.

Sun Java hosts a comprehensive guide to internationalizing java products at *http://java.sun.com/docs/books/tutorial/i18n/TOC.html*.

All GateIn 3.2 applications contain property files for various languages. They are packaged with the portlets applications in a `WEB-INF/classes/locale/` directory.

These files are located in the `classes` folder of the WEB-INF directory, so as to be loaded by the ClassLoader.

All resource files are in a subfolder named `locale`.

For instance; the translations for the *NavigationPortlet* are located in `web.war/WEB-INF/classes/locale/portlet/portal`

```
NavigationPortlet_de.properties
NavigationPortlet_en.properties
NavigationPortlet_es.properties
NavigationPortlet_fr.properties
NavigationPortlet_nl.properties
NavigationPortlet_ru.properties
NavigationPortlet_uk.properties
NavigationPortlet_ar.xml
```

Inside those file are typical `key=value` Java EE properties. For example the French one:

```
javax.portlet.title=Portlet Navigation
```

There are also properties files in the portal itself. They form the **portal resource bundle**.

From a portlet you can then access translations from the portlet itself or shared at the portal level, both are aggregated when you need them.

Translation in XML format

It is also possible to use a proprietary XML format to define translations. This is a more convenient way to translate a document for some languages such as Japanese, Arabic or Russian. Property files have te be ASCII encoded, while the XML file can define its encoding. As a result it's easier for a human being to read (and fix) a translation in XML instead of having to decode and encode the property file.

For more information refer to: *Section 3.10, "XML Resources Bundles"*

3.7.2. Locales configuration

Various languages are available in the portal package. The configuration below will define which languages are shown in the "Change Language" section and made available to users.

The `02portal.war:/WEB-INF/conf/common/common-configuration.xml` file of your installation contains the following section:

```
<component>
  <key>org.exoplatform.services.resources.LocaleConfigService</key>
```

```
  <type>org.exoplatform.services.resources.impl.LocaleConfigServiceImpl</type>
  <init-params>
    <value-param>
      <name>locale.config.file</name>
      <value>war:/conf/common/locales-config.xml</value>
    </value-param>
  </init-params>
</component>
```

This configuration points to the locale configuration file.

The locale configuration file (`02portal.war:/WEB-INF/conf/common/locales-config.xml`) contains the following code:

```
<?xml version="1.0" encoding="UTF-8"?>
<locales-config>
  <locale-config>
    <locale>en</locale>                                          (1)
    <output-encoding>UTF-8</output-encoding>                     (2)
    <input-encoding>UTF-8</input-encoding>                       (3)
    <description>Default configuration for english locale</description>  (4)
  </locale-config>

  <locale-config>
    <locale>fr</locale>
    <output-encoding>UTF-8</output-encoding>
    <input-encoding>UTF-8</input-encoding>
    <description>Default configuration for the french locale</description>
  </locale-config>

  <locale-config>
    <locale>ar</locale>
    <output-encoding>UTF-8</output-encoding>
    <input-encoding>UTF-8</input-encoding>
    <description>Default configuration for the arabic locale</description>
    <orientation>rt</orientation>                                (5)
  </locale-config>
</locales-config>
```

(1) *locale* The locale has to be defined such as defined here *http://ftp.ics.uci.edu-pub-ietf-http-related-iso639.txt*. In this example "*ar*" is Arabic.

2. *output-encoding* deals with character encoding. It is recommended that **UTF-8** be used.
3. *input-encoding* In the java implementation, the encoding parameters will be used for the request response stream. The input-encoding parameter will be used for request setCharacterEncoding(..).
4. *description* Description for the language
5. *orientation* The default orientation of text and images is Left-To-Right. GateIn 3.2 supports **Right-To-Left** orientation. Modifying text orientation is explained in *Section 3.9, "RTL (Right To Left) Framework"*.

3.7.3. ResourceBundleService

The resource bundle service is configured in: `02portal.war:/WEB-INF/conf/common/common-configuration.xml`:

```
<component>
 <key>org.exoplatform.services.resources.ResourceBundleService</key>
 <type>org.exoplatform.services.resources.impl.SimpleResourceBundleService</type>
 <init-params>
  <values-param>
   <name>classpath.resources</name>                                    (1)
   <description>The resources  that start with the following package name should be load from
file system</description>
   <value>locale.portlet</value>
  </values-param>
  <values-param>
   <name>init.resources</name>                                         (2)
   <description>Initiate the following resources during the first launch</description>
   <value>locale.portal.expression</value>
   <value>locale.portal.services</value>
   <value>locale.portal.webui</value>
   <value>locale.portal.custom</value>
   <value>locale.navigation.portal.classic</value>
   <value>locale.navigation.group.platform.administrators</value>
   <value>locale.navigation.group.platform.users</value>
   <value>locale.navigation.group.platform.guests</value>
   <value>locale.navigation.group.organization.management.executive-board</value>
  </values-param>
  <values-param>
   <name>portal.resource.names</name>                                  (3)
   <description>The properties files of  the portal ,  those file will be merged
    into one ResoruceBundle properties </description>
   <value>locale.portal.expression</value>
   <value>locale.portal.services</value>
```

```
      <value>locale.portal.webui</value>
      <value>locale.portal.custom</value>
    </values-param>
  </init-params>
</component>
```

1. *classpath.resources* are discussed in a later section.
2. *init.resources* TODO
3. *portal.resource.names* Defines all resources that belong to the *Portal Resource Bundle*.

   These resources are merged to a single resource bundle which is accessible from anywhere in GateIn 3.2. All these keys are located in the same bundle, which is separated from the navigation resource bundles.

3.7.4. Navigation Resource Bundles

There is a resource bundle for each navigation. A navigation can exist for user, groups, and portal.

The previous example shows bundle definitions for the navigation of the classic portal and of four different groups. Each of these resource bundles occupies a different sphere, they are independent of each other and they are not included in the `portal.resource.names` parameter.

The properties for a group must be in the `WEB-INF/classes/locale/navigation/group/` folder. `/WEB-INF/classes/locale/navigation/group/organization/management/executive-board_en.properties`, for example.

The folder and file names must correspond to the group hierarchy. The group name "`executive-board`" is followed by the iso 639 code.

For each language defined in `LocalesConfig` must have a resource file defined. If the name of a group is changed the name of the folder and/or files of the correspondent navigation resource bundles must also be changed.

Content of `executive-board_en.properties`:

```
organization.title=Organization
organization.newstaff=New Staff
organization.management=Management
```

This resource bundle is only accessible for the navigation of the `organization.management.executive-board` group.

3.7.5. Portlets

Portlets are independent applications and deliver their own resource files.

All shipped portlet resources are located in the **locale/portlet** subfolder. The ResourceBundleService parameter **classpath.resources** defines this subfolder.

Procedure 3.1. Example

1. To add a Spanish translation to the *`GadgetPortlet`*.
2. Create the file `GadgetPortlet_es.properties` in: `WEB-INF/classes/locale/portlet/gadget/GadgetPortlet`.
3. In `portlet.xml`, add *`Spanish`* as a **supported-locale** ('es' is the 2 letters code for Spanish), the **resource-bundle** is already declared and is the same for all languages :

```
<supported-locale>en</supported-locale>
<supported-locale>es</supported-locale>
<resource-bundle>locale.portlet.gadget.GadgetPortlet</resource-bundle>
```

See the portlet specification for more details about portlet internationalization.

3.7.5.1. Standard portlet resource keys

The portlet specifications defines three standard keys: Title, Short Title and Keywords. Keywords is formatted as a comma-separated list of tags.

```
javax.portlet.title=Breadcrumbs Portlet
javax.portlet.short-title=Breadcrumbs
javax.portlet.keywords=Breadcrumbs, Breadcrumb
```

3.7.5.2. Debugging resource bundle usage

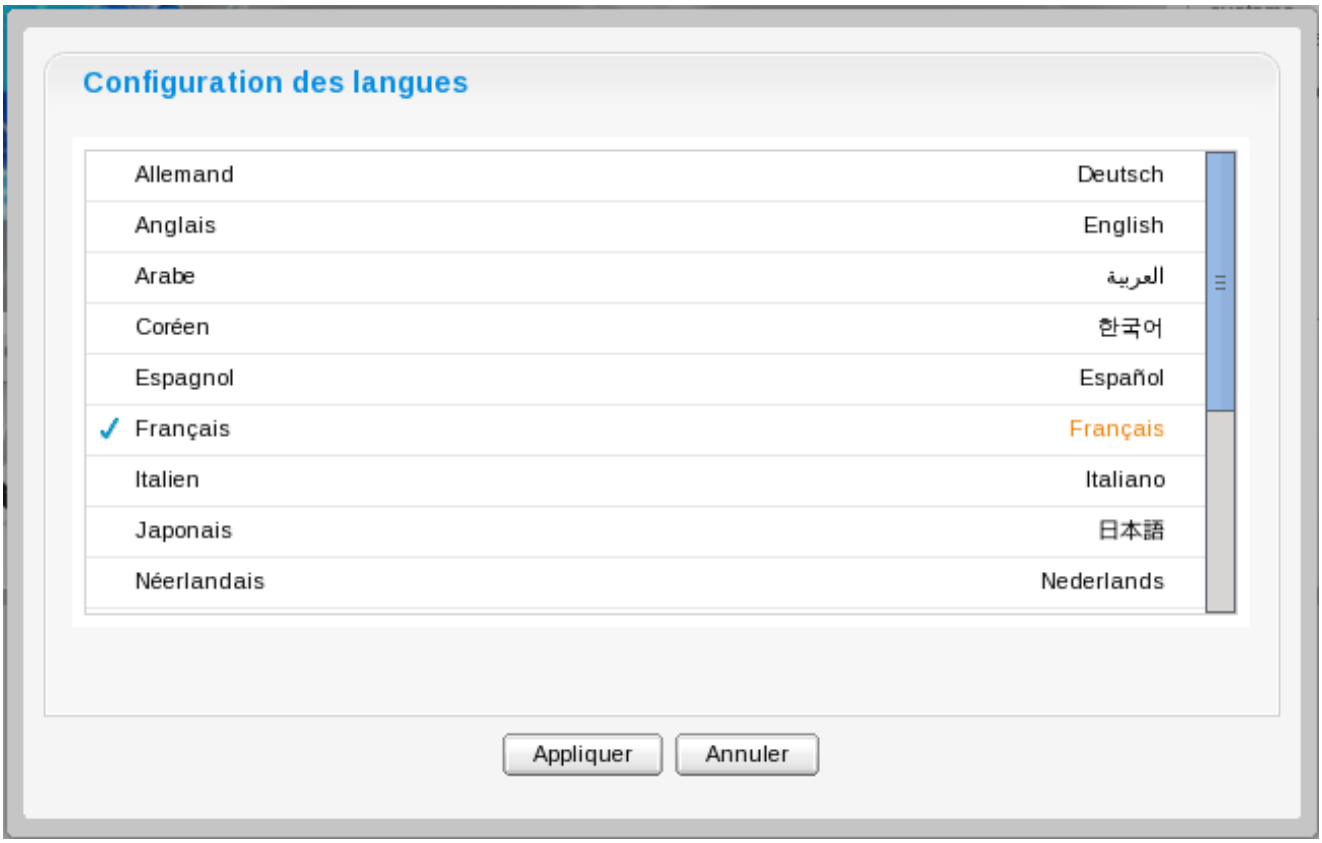
When translating an application it can sometimes be difficult to find the right key for a given property.

Execute the portal in **debug mode** and select, from the available languages, select the special language; **Magic locale**.

This feature translates a key to the same key value.

For example, the translated value for the key "*`organization.title`*" is simply the value "*`organization.title`*". Selecting that language allows use of the portal and its applications with all the keys visible. This makes it easier to find out the correct key for a given label in the portal page.

3.7.6. Translating the language selection form



When choosing a language as on the screenshot above, the user is presented with a list of languages on the left side in the current chosen language and on the right side, the same language translated into its own language. Those texts are obtained from the JDK API `java.util.Locale.getDisplayedLanguage()` and `java.util.Locale.getDisplayedCountry()` (if needed) and all languages may not be translated and can also depend on the JVM currently used. It is still possible to override those values by editing the `locale.portal.webui` resource bundle, to do so edit the file `gatein.ear/02portal.war/WEB-INF/classes/locale/portal/webui_xx_yy.properties` where `xx_yy` represents the country code of the language in which you want to translate a particular language. In that file, add or modify a key such as `Locale.xx_yy` with the value being the translated string.

Example 3.1. Changing the displayed text for Traditional Chinese in French

First edit `gatein.ear/02portal.war/WEB-INF/classes/locale/portal/webui_fr.properties` where `ne` is the country code for French, and add the following key into it:

```
Locale.zh_TW=Chinois traditionnel
```

After a restart the language will be updated in the user interface when a user is trying to change the current language.

3.8. Pluggable Locale Policy

Every request processed by every portlet is invoked within a context of current `Locale`. Current `Locale` can be retrieved by calling `getLocale()` method of `javax.portlet.PortletRequest` interface.

The exact algorithm for determining the current `Locale` is not specified by Portlet Specification, and is left to portlet containers to implement the way they deem most appropriate.

In GateIn 3.2 each portal instance has a default language which can be used to present content for new users. Another option is to use each user's browser language preference, provided it matches one of the available localizations that GateIn 3.2 supports, and only fallback to portal default language if no match is found. Every user, while visiting a portal, has an option to change the language of the user interface by using a Language chooser. The choice can be remembered for the duration of the session, or it can be remembered for a longer period using a browser cookie, or - for registered and logged-in users - it can be saved into user's profile.

So, we can see that there is more than one way to determine the `Locale` to be used for displaying a portal page to the user. For this reason the mechanism for determining the current `Locale` of the request is pluggable in GateIn 3.2, so the exact algorithm can be customized.

3.8.1. LocalePolicy API

Customization is achieved by using LocalePolicy API, which is a simple API consisting of one interface, and one class:

- `org.exoplatform.services.resources.LocalePolicy` interface
- `org.exoplatform.services.resources.LocaleContextInfo` class

`LocalePolicy` interface defines a single method that's invoked on the installed `LocalePolicy` service implementation:

```
public interface LocalePolicy
{
  public Locale determineLocale(LocaleContextInfo localeContext);
}
```

`Locale` returned by determineLocale() method is the `Locale` that will be returned to portlets when they call `javax.portlet.PortletRequest.getLocale()` method.

The returned `Locale` has to be one of the locales supported by portal, otherwise it will fallback to portal-default `Locale`.

The supported locales are listed in `gatein.ear/02portal.war/WEB-INF/conf/common/locales-config.xml` file as described in *Section 3.7.2, "Locales configuration"* .

The `determineLocale()` method takes a parameter of type `LocaleContextInfo`, which represents a compilation of preferred locales from different sources - user's profile, portal default, browser language settings, current session, browser cookie … All these different sources of `Locale` configuration or preference are used as input to `LocalePolicy` implementation that decides which `Locale` should be used.

3.8.2. Default `LocalePolicy`

By default, `org.exoplatform.portal.application.localization.DefaultLocalePolicyService` - an implementation of `LocalePolicy` - is installed to provide the default behaviour. This, however, can easily be extended and overriden. A completely new implementation can also be written from scratch.

`DefaultLocalePolicyService` treats logged-in users slightly differently than anonymous users. Logged-in users have a profile that can contain language preference, while anonymous users don't.

Here is an algorithm used for anonymous users.

Procedure 3.2. An algorithm for anonymous users

1. Iterate over `LocaleContextInfo` properties in the following order:
   - `cookieLocales`
   - `sessionLocale`
   - `browserLocales`
   - `portalLocale`
2. Get each property's value - if it's a collection, get the first value.
3. If value is one of the supported locales return it as a result.
4. If value is not in the supported locales set, try to remove country information, and check if a language matching locale is in the list of supported locales. If so, return it as a result.
5. Otherwise, continue with the next property.

If no supported locale is found the return locale eventually defaults to `portalLocale`.

The algorithm for logged-in users is virtually the same except that the first `Locale` source checked is user's profile.

Procedure 3.3. An algorithm for logged-in users

1. Iterate over `LocaleContextInfo` properties in the following order:
   - `userProfile`
   - `cookieLocales`
   - `sessionLocale`
   - `browserLocales`
   - `portalLocale`
2. The rest is the same as for anonymous users ...

3.8.3. Custom `LocalePolicy`

The easiest way to customize the `LocalePolicy` is to extend `DefaultLocalePolicyService`. The study of its source code will be required. There is ample JavaDoc that provides thorough information. Most customizations will involve simply overriding one or more of its protected methods.

An example of a customization is an already provided `NoBrowserLocalePolicyService`. By overriding just one method, it skips any use of browser language preference.

```
public class NoBrowserLocalePolicyService extends DefaultLocalePolicyService
{
  /**
   * Override super method with no-op.
   *
    * @param context locale context info available to implementations in order to determine
 appropriate Locale
   * @return null
   */
  @Override
  protected Locale getLocaleConfigFromBrowser(LocaleContextInfo context)
  {
    return null;
  }
}
```

3.8.4. LocalePolicy Configuration

The `LocalePolicy` framework is enabled for portlets by configuring LocalizationLifecycle class in portal's webui configuration file: `gatein.ear/02portal.war/WEB-INF/webui-configuration.xml`:

```
<application-lifecycle-listeners>
  ...
  <listener>org.exoplatform.portal.application.localization.LocalizationLifecycle</listener>
</application-lifecycle-listeners>
```

The default `LocalePolicy` implementation is installed as GateIn Kernel portal service via `gatein.ear/02portal.war/WEB-INF/conf/portal/web-configuration.xml`. So here you can change it to different value according to your needs.

The following fragment is responsible for installing the service:

```
<component>
  <key>org.exoplatform.services.resources.LocalePolicy</key>
  <type>org.exoplatform.portal.application.localization.DefaultLocalePolicyService</type>
</component>
```

Besides implementing `LocalePolicy`, the service class also needs to implement `org.picocontainer.Startable` interface in order to get installed.

3.8.5. Keeping non-bridged resources in sync with current Locale

In portals all the resources that are not portlets themselves but are accessed through portlets - reading data through `PortletRequest`, and writing to `PortletResponse` - are referred to as 'bridged'. Any resources that are accessed directly, bypassing portal filters and servlets, are referred to as 'non-bridged'.

Non-bridged servlets, and .jsps have no access to `PortalRequest`. They don't use `PortletRequest.getLocale()` to determine current `Locale`. Instead, they use `ServletRequest.getLocale()` which is subject to precise semantics defined by Servlet specification - it reflects browser's language preference.

In other words, non-bridged resources don't have a notion of current `Locale` in the same sense that portlets do. The result is that when mixing portlets and non-bridged resources there may be a

localization mismatch - an inconsistency in the language used by different resources composing your portal page.

This problem is addressed by `LocalizationFilter`. This is a filter that changes the behaviour of `ServletRequest.getLocale()` method so that it behaves the same way as `PortletRequest.getLocale()`. That way even localization of servlets, and .jsps accessed in a non-bridged manner can stay in sync with portlet localization.

`LocalizationFilter` is installed through portal's web.xml file: `gatein.ear/02portal.war/WEB-INF/web.xml`

```
<filter>
    <filter-name>LocalizationFilter</filter-name>
    <filter-class>org.exoplatform.portal.application.localization.LocalizationFilter</filter-class>
 </filter>

 ...

 <filter-mapping>
   <filter-name>LocalizationFilter</filter-name>
   <url-pattern>*.jsp</url-pattern>
   <dispatcher>INCLUDE</dispatcher>
   <dispatcher>FORWARD</dispatcher>
   <dispatcher>REQUEST</dispatcher>
   <dispatcher>ERROR</dispatcher>
</filter-mapping>
```

There is a tiny limitation with this mechanism in that it is unable to determine the current portal, and consequently its default language. As a result the portalLocale defaults to `English`, but can be configured to something else by using filter's `PortalLocale` init param. For example:

```
<filter>
    <filter-name>LocalizationFilter</filter-name>
    <filter-class>org.exoplatform.portal.application.localization.LocalizationFilter</filter-class>
    <init-param>
      <param-name>PortalLocale</param-name>
      <param-value>fr_FR</param-value>
    </init-param>
 </filter>
```

By default, `LocalizationFilter` is applied to *.jsp, which is considered the minimum required by GateIn 3.2 to properly keep its non-bridged resources in sync with the rest of the portal. Additionally deployed portlets, and portal applications, may need broader mapping to cover their non-bridged resources.

Avoid using `/*`, `/public/*`, `/private/*`, and similar broad mappings as `LocalizationFilter` sometimes adversely interacts with the processing of portlet requests. Use multiple filter-mappings instead to specifically target non-bridged resources.

Keeping the mapping limited to only non-bridged resources will minimize any impact on performance as well.

3.9. RTL (Right To Left) Framework

The text orientation depends on the current locale setting. The orientation is a Java 5 enum that provides a set of functionalities:

```
LT, // Western Europe
RT, // Middle East (Arabic, Hebrew)
TL, // Japanese, Chinese, Korean
TR; // Mongolian
public boolean isLT() { ... }
public boolean isRT() { ... }
public boolean isTL() { ... }
public boolean isTR() { ... }
```

The object defining the Orientation for the current request is the `UIPortalApplication`. However it should be accessed at runtime using the `RequestContext` that delegates to the `UIPortalApplication`.

In the case of a `PortalRequestContext` it is a direct delegate as the `PortalRequestContext` has a reference to the current `UIPortalApplication`.

In the case of a different context such as the `PortletRequestContext`, it delegates to the parent context given the fact that the root `RequestContext` is always a `PortalRequestContext`.

3.9.1. Groovy templates

Orientation is defined by implicit variables in the groovy binding context:

Orientation
: The current orientation as an Orientation

isLT
: The value of orientation.isLT()

isRT
: The value of orientation.isRT()

dir
: The string 'ltr' if the orientation is LT or the string 'rtl' if the orientation is RT.

3.9.2. Stylesheet

The skin service handles stylesheet rewriting to accommodate the orientation. It works by appending -lt or -rt to the stylesheet name.

For instance: `/web/skin/portal/webui/component/UIFooterPortlet/DefaultStylesheet-rt.css` will return the same stylesheet as `/web/skin/portal/webui/component/UIFooterPortlet/DefaultStylesheet.css` but processed for the RT orientation. The *`-lt`* suffix is optional.

Stylesheet authors can annotate their stylesheet to create content that depends on the orientation.

Example 1. In the example we need to use the orientation to modify the float attribute that will make the horizontal tabs either float on left or on right:

```
float: left; /* orientation=lt */
float: right; /* orientation=rt */
font-weight: bold;
text-align: center;
white-space: nowrap;
```

The LT produced output will be:

```
float: left; /* orientation=lt */
font-weight: bold;
text-align: center;
white-space: nowrap;
```

The RT produced output will be:

```
float: right; /* orientation=rt */
font-weight: bold;
text-align: center;
white-space: nowrap;
```

Example 2. In this example we need to modify the padding according to the orientation:

```
color: white;
line-height: 24px;
padding: 0px 5px 0px 0px; /* orientation=lt */
padding: 0px 0px 0px 5px; /* >orientation=rt */
```

The LT produced output will be:

```
color: white;
line-height: 24px;
padding: 0px 5px 0px 0px; /* orientation=lt */
```

The RT produced output will be:

```
color: white;
line-height: 24px;
padding: 0px 0px 0px 5px; /* orientation=rt */
```

3.9.3. Images

Sometimes it is necessary to create an RT version of an image that will be used from a template or from a stylesheet. However symmetric images can be automatically generated avoiding the necessity to create a mirrored version of an image and furthermore avoiding maintenance cost.

The web resource filter uses the same naming pattern as the skin service. When an image ends with the -rt suffix the portal will attempt to locate the original image and create a mirror of it.

For instance: requesting the image `/GateInResources/skin/DefaultSkin/webui/component/UITabSystem/UITabs/background/NormalTabStyle-rt.gif` returns a mirror of the image `/GateInResources/skin/DefaultSkin/webui/component/UITabSystem/UITabs/background/NormalTabStyle.gif`.

Note

It is important to consider whether the image to be mirrored is symmetrical as this will impact it's final appearance.

Here is an example combining stylesheet and images:

```
line-height: 24px;
background: url('background/NavigationTab.gif') no-repeat right top; /* orientation=lt */
background: url('background/NavigationTab-rt.gif') no-repeat left top; /* orientation=rt */
padding-right: 2px; /* orientation=lt */
padding-left: 2px; /* orientation=rt */
```

3.9.4. Client side JavaScript

The `eXo.core.I18n` object provides the following parameters for orientation:

getOrientation()
: Returns either the string lt or rt

getDir()
: Returns either the string ltr or rtl

isLT()
: Returns true for LT

isRT()
: Returns true of RT

3.10. XML Resources Bundles

3.10.1. Motivation

Resource bundles are usually stored in property files. However, as property files are plain files, issues with the encoding of the file may arise. The XML resource bundle format has been developed to provide an alternative to property files.

- The XML format declares the encoding of the file. This avoids use of the native2ascii program which can interfere with encoding.
- Property files generally use ISO 8859-1 character encoding which does not cover the full unicode charset. As a result, languages such as Arabic would not be natively supported.
- Tooling for XML files is better supported than the tooling for Java property files and thus the XML editor copes well with the file encoding.

3.10.2. XML format

The XML format is very simple and has been developed based on the *DRY* (Don't Repeat Yourself) principle. Usually resource bundle keys are hierarchically defined and we can leverage

the hierarchic nature of the XML for that purpose. Here is an example of turning a property file into an XML resource bundle file:

```
UIAccountForm.tab.label.AccountInputSet = ...
UIAccountForm.tab.label.UIUserProfileInputSet = ...
UIAccountForm.label.Profile = ...
UIAccountForm.label.HomeInfo= ...
UIAccountForm.label.BusinessInfo= ...
UIAccountForm.label.password= ...
UIAccountForm.label.Confirmpassword= ...
UIAccountForm.label.email= ...
UIAccountForm.action.Reset= ...
```

```
<?xml version="1.0" encoding="UTF-8"?>
<bundle>
 <UIAccountForm>
  <tab>
   <label>
    <AccountInputSet>...</AccountInputSet>
    <UIUserProfileInputSet>...</UIUserProfileInputSet>
   </label>
  </tab>
  <label>
   <Profile>...</Profile>
   <HomeInfo>...</HomeInfo>
   <BusinessInfo>...</BusinessInfo>
   <password>...</password>
   <Confirmpassword>...</Confirmpassword>
   <email>...</email>
  </label>
  <action>
   <Reset>...</Reset>
  </action>
 </UIAccountForm>
</bundle>
```

3.10.3. Portal support

In order to be loaded by the portal at runtime (actually the resource bundle service), the name of the file must be the same as a property file and it must use the **.xml** suffix.

For example; for the Account Portlet to be displayed in Arabic, the resource bundle would be **AccountPortlet_ar.xml** rather than **AccountPortlet_ar.properties**.

3.11. JavaScript Inter Application Communication

3.11.1. Overview

JavaScript Inter Application Communication is designed to allow applications within a page to exchange data. This library is made for broadcasting messages on topic.

It is based on 3 functions:

- Subscribe.
- Publish.
- Unsubscribe.

A subscription to a topic will receive any subtopic messages. For example; An application subscribed to "`/eXo/application`" will receive messages sent on the "`/eXo/application/map`" topic. A message sent on "`/eXo`", however, would not be received.

Subscription Topics

/eXo
: This topic contains all the events generated by the platform.

/eXo/portal/notification
: A message is sent on this topic will prompt a popup notification in the top right of the screen.

3.11.2. Library

The Inter Application Communication library is found in `01eXoResources.war:/javascript/eXo/core/Topic.js`

```
/**
 * publish is used to publish an event to the other subscribers to the given channels
 * @param {Object} senderId is a string that identify the sender
 * @param {String} topic is the topic that the message will be published
 * @param {Object} message is the message that's going to be delivered to the subscribers to the topic
 */
Topic.prototype.publish = function(/*Object*/ senderId, /*String*/ topicName, /*Object*/ message ) { ... }

/**
 * isSubscribed is used to check if a function receive the events from a topic
```

```
 * @param {String} topic The topic.
 * @param {Function} func is the name of the function of obj to call when a message is received
 on the topic
 */
Topic.prototype.isSubscribed = function(/*String*/ topic, /*Function*/ func) { ... }

/**
 * subscribe is used to subscribe a callback to a topic
 * @param {String} topic is the topic that will be listened
 * @param {Function} func is the name of the function of obj to call when a message is received
 on the topic
 *
 * func is a function that take a Object in parameter. the event received have this format:
 * {senderId:senderId, message:message, topic: topic}
 *
 */
Topic.prototype.subscribe = function(/*String*/ topic, /*Function*/ func) { ... }

/**
 * unsubscribe is used to unsubscribe a callback to a topic
 * @param {String} topic is the topic
 * @param {Object} id is the id of the listener we want to unsubscribe
 */
Topic.prototype.unsubscribe = function(/*String*/ topic, /*Object*/ id) { ... }

Topic.prototype.initCometdBridge = function() { ... }
```

3.11.3. Syntax

The three messaging functions require particular objects and definitions in their syntax:

Subscribe

The `subscribe` function is used to subscribe a callback to a topic. It uses the following parameters:

topic

The topic that will be listened for.

func

The name of the object function to call when a message is received on the topic. It has to be a function that takes an Object parameter. The event received will have this format:

```
{
  senderId:senderId,
```

```
  message:message,
  topic: topic
}
```

Publish

The `publish` function is used to publish an event to the other subscribered applications through the given channels. Its parameters are:

senderId

This is a string that identifies the sender.

topicName

The topic that the message will be published.

message

This is the message body to be delivered to the subscribers to the topic.

Unsubscribe

The `unsubscribe` function is used to unsubscribe a callback to a topic. The required parameters are:

topic

The topic that will is to be unsubscribed from.

id

This is the context object.

3.11.4. Example of Javascript events usage

```
<%@ taglib uri="http://java.sun.com/portlet" prefix="portlet" %>
<portlet:defineObjects/>
<div>
  <p>
    Received messages:
    <div id="received_<portlet:namespace/>">

    </div>
  </p>

  <p>
    Send message:
                    <input type="text" id="msg_<portlet:namespace/>"/> <a href="#"
 onclick="send_<portlet:namespace/>();">send</a>
  </p>
</div>
```

```
<script type="text/javascript">

 Function.prototype.bind = function(object) {
  var method = this;
   return function() {
   method.apply(object, arguments);
  }
 }

 function send_<portlet:namespace/>() {
  var msg = document.getElementById("msg_<portlet:namespace/>").value;
  eXo.core.Topic.publish("<portlet:namespace/>", "/demo", msg);
 }

 function Listener_<portlet:namespace/>(){

 }

 Listener_<portlet:namespace/>.prototype.receiveMsg = function(event) {
  document.getElementById("received_<portlet:namespace/>").innerHTML =
   document.getElementById("received_<portlet:namespace/>").innerHTML + "<br />* " +
   event.senderId + ": " + event.message;
 }

 function init_<portlet:namespace/>() {
  var listener_<portlet:namespace/> = new Listener_<portlet:namespace/>();
                                eXo.core.Topic.subscribe("/demo",          listener_<portlet:namespace/
>.receiveMsg.bind(listener_<portlet:namespace/>));
 }

 init_<portlet:namespace/>();
</script>
```

3.12. Upload Component

3.12.1. Upload Service

The service is defined by the class: `org.exoplatform.upload.UploadService`;

This can be configured with the following xml code:

```
<component>
```

```
  <type>org.exoplatform.upload.UploadService</type>
   <init-params>
    <value-param>
     <name>upload.limit.size</name>
     <description>Maximum size of the file to upload in MB</description>
     <value>10</value>
    </value-param>
   </init-params>
  </component>
```

This code allows for a default upload size limit for the service to be configured. The value unit is in MegaBytes.

This limit will be used by default by all applications if no application-specific limit is set. Setting a different limit for applications is discussed in a later section.

If the value is set at `0` the upload size is unlimited.

Procedure 3.4. How to use the upload component

1. Create an object type `org.exoplatform.webui.form.UIFormUploadInput`.

   Two constructors are available for this:

   ```
   public UIFormUploadInput(String name, String bindingExpression)
   ```

   or:

   ```
   public UIFormUploadInput(String name, String bindingExpression, int limit)
   ```

   This is an example using the second form :

   ```
   PortletRequestContext pcontext = (PortletRequestContext)WebuiRequestContext.getCurrentInstance();
   PortletPreferences portletPref = pcontext.getRequest().getPreferences();
   int limitMB = Integer.parseInt(portletPref.getValue("uploadFileSizeLimitMB", "").trim());
   UIFormUploadInput uiInput = new UIFormUploadInput("upload", "upload", limitMB);
   ```

2. To obtain the limit from the `xml` configuration, this piece of code can be added to the either `portlet.xml` or `portlet-preferences.xml` :

   ```
   <preference>
   ```

```
  <name>uploadFileSizeLimitMB</name>
  <value>30</value>
  <read-only>false</read-only>
</preference>
```

Again, a `0` value means an unlimited upload size, and the value unit is set in MegaBytes.

3. Use the `getUploadDataAsStream()` method to get the uploaded data:

```
UIFormUploadInput input = (UIFormUploadInput)uiForm.getUIInput("upload");
InputStream inputStream = input.getUploadDataAsStream();
...
jcrData.setValue(inputStream);
```

4. The upload service stores a temporary file on the filesystem during the upload process. When the upload is finished, the service must be cleaned in order to:

    1. Delete the temporary file.
    2. Delete the classes used for the upload.

    Use the`removeUpload()` method defined in the upload service to purge the file:

```
UploadService uploadService = uiForm.getApplicationComponent(UploadService.class) ;
UIFormUploadInput uiChild = uiForm.getChild(UIFormUploadInput.class) ;
uploadService.removeUpload(uiChild.getUploadId()) ;
```

Saving the uploaded file

Ensure the file is saved **before** the service is cleaned.

3.13. Deactivation of the Ajax Loading Mask Layer

3.13.1. Purpose

The loading mask layer is deployed after an ajax-call. Its purpose is to block the GUI in order to prevent further user actions until the the ajax-request has been completed.

However, the mask layer may need to be deactivated in instances where the portal requires user instructions before previous instructions have been carried out.

Procedure 3.5. How to deactivate the ajax-loading mask

1. Generate a script to make an asynchronous ajax-call. Use the `uicomponent.doAsync()` method rather than the `uicomponent.event()` method.

   For example:

```
<a href="<%=uicomponent.doAsync(action, beanId, params)%>" alt="">Asynchronous</a>
```

2. The `doAsync()` method automatically adds the following new parameter into the parameters list; `asyncparam = new Parameter(AJAX ASYNC,"true"); (AJAX ASYNC == "ajax async")`

   This request is asynchronous and the ajax-loading mask will not deployed.

Note

An asynchronous request can still be made using the `uicomponent.event()`. When using this method, however, the asyncparam must be added manually.

The GUI will be blocked to ensure a user can only request one action at a time and while the request seems to be synchronous, all ajax requests are, in fact always asynchronous. For further information refer to *Section 3.13.2, "Synchronous issue"*.

3.13.2. Synchronous issue

Most web browsers support ajax requests in two modes: *Synchronous* and *Asynchronous*. This mode is specified with a boolean `bAsync` parameter.

```
var bAsync = false; // Synchronous
request.open(instance.method, instance.url, bAsync);
```

However, in order to work with browsers that do not support *Synchronous* requests, `bAsync` is set to always be true (Ajax request will always be asynchronous).

```
// Asynchronous request
request.open(instance.method, instance.url, true);
```

3.14. Javascript Configuration

Managing Javascript scripts in an application like GateIn 3.2 is a critical part of the configuration work. Configuring the scripts correctly will result in a faster response time from the portal.

Every portlet can have its own javscript code but in many cases it is more convenient to reuse some existing shared libraries. For that reason, GateIn 3.2 has a mechanism to easily register the libraries that will be loaded when the first page will be rendered.

To do so, every WAR deployed in GateIn 3.2 can register the `.js` files with the groovy script `WEB-INF/conf/script/groovy/JavascriptScript.groovy`. (TODO: this file doesn't seem to exist)

The example file below is found in the 01eXoResources.war

```
JavascriptService.addJavascript("eXo", "/javascript/eXo.js", ServletContext);
/* Animation Javascripts */
JavascriptService.addJavascript("eXo.animation.ImplodeExplode", "/javascript/eXo/animation/ImplodeExplode.js", ServletContext);
/* Application descriptor */
JavascriptService.addJavascript("eXo.application.ApplicationDescriptor", "/javascript/eXo/application/ApplicationDescriptor.js", ServletContext);
/* CORE Javascripts */
JavascriptService.addJavascript("eXo.core.Utils", "/javascript/eXo/core/Util.js", ServletContext);
JavascriptService.addJavascript("eXo.core.DOMUtil", "/javascript/eXo/core/DOMUtil.js", ServletContext);
JavascriptService.addJavascript("eXo.core.Browser", "/javascript/eXo/core/Browser.js", ServletContext);
JavascriptService.addJavascript("eXo.core.MouseEventManager", "/javascript/eXo/core/MouseEventManager.js", ServletContext);
JavascriptService.addJavascript("eXo.core.UIMaskLayer", "/javascript/eXo/core/UIMaskLayer.js", ServletContext);
JavascriptService.addJavascript("eXo.core.Skin", "/javascript/eXo/core/Skin.js", ServletContext);
JavascriptService.addJavascript("eXo.core.DragDrop", "/javascript/eXo/core/DragDrop.js", ServletContext);
JavascriptService.addJavascript("eXo.core.TemplateEngine", "/javascript/eXo/core/TemplateEngine.js", ServletContext);
/* Widget Javascripts */
JavascriptService.addJavascript("eXo.widget.UIWidget", "/javascript/eXo/widget/UIWidget.js", ServletContext);
JavascriptService.addJavascript("eXo.widget.UIAddWidget", "/javascript/eXo/widget/UIAddWidget.js", ServletContext);
JavascriptService.addJavascript("eXo.widget.UIExoWidget", "/javascript/eXo/widget/UIExoWidget.js", ServletContext);
/* Desktop Javascripts */
```

```
JavascriptService.addJavascript("eXo.desktop.UIDockbar", "/javascript/eXo/desktop/
UIDockbar.js", ServletContext);
JavascriptService.addJavascript("eXo.desktop.UIDesktop", "/javascript/eXo/desktop/
UIDesktop.js", ServletContext);
/* WebUI Javascripts */
JavascriptService.addJavascript("eXo.webui.UIItemSelector", "/javascript/eXo/webui/
UIItemSelector.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIForm", "/javascript/eXo/webui/
UIForm.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIPopup", "/javascript/eXo/webui/
UIPopup.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIPopupSelectCategory", "/javascript/eXo/webui/
UIPopupSelectCategory.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIPopupWindow", "/javascript/eXo/webui/
UIPopupWindow.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIVerticalScroller", "/javascript/eXo/webui/
UIVerticalScroller.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIHorizontalTabs", "/javascript/eXo/webui/
UIHorizontalTabs.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIPopupMenu", "/javascript/eXo/webui/
UIPopupMenu.js", ServletContext);
JavascriptService.addJavascript("eXo.webui.UIDropDownControl", "/javascript/eXo/webui/
UIDropDownControl.js", ServletContext);
/* Portal Javascripts */
JavascriptService.addJavascript("eXo.portal.PortalHttpRequest", "/javascript/eXo/portal/
PortalHttpRequest.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.UIPortal", "/javascript/eXo/portal/
UIPortal.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.UIWorkspace", "/javascript/eXo/portal/
UIWorkspace.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.UIPortalControl", "/javascript/eXo/portal/
UIPortalControl.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.PortalDragDrop", "/javascript/eXo/portal/
PortalDragDrop.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.UIPortalNavigation", "/javascript/eXo/portal/
UIPortalNavigation.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.UIMaskWorkspace", "/javascript/eXo/portal/
UIMaskWorkspace.js", ServletContext);
JavascriptService.addJavascript("eXo.portal.UIExoStartMenu", "/javascript/eXo/portal/
UIExoStartMenu.js", ServletContext);
/* Desktop Javascripts 2 */
JavascriptService.addJavascript("eXo.desktop.UIWindow", "/javascript/eXo/desktop/
UIWindow.js", ServletContext);
```

Note that even registered dedicated javascripts will be merged into a single `merged.js` file when the server loads. This reduces the number of HTTP calls as seen in the home page source code:

```
<script type="text/javascript" src="/portal/javascript/merged.js"></script>
```

Although this optimization is useful for a production environment, it may be easier to deactivate this optimization while debugging javascript problems.

To do this, set the java system property `exo.product.developing` to `true`.

To see or use the merged file set this property to `false`.

The property can be passed as a JVM parameter with the `-D` option in your `GateIn.sh` or `GateIn.bat` startup script.

Every javascript file is associated with a module name which acts as a namespace. The module name is passed as a first parameter to JavascriptService.addJavascript() function as in the following example:

```
JavascriptService.addJavascript("eXo.core.DragDrop",
    "/javascript/eXo/core/DragDrop.js", ServletContext);
```

Inside the associated javascript files, functions are exposed as global javascript function variables using the module name.

For example:

```
eXo.core.DragDrop = new DragDrop();
```

It is also possible to use `eXo.require()` javascript method to lazy load and evaluate some javascript code. This is quite useful for the portlet or widget applications that will use this javascript only once. Otherwise, if the library is reusable in several places it is better to reference it in the groovy file.

3.15. Navigation Controller

3.15.1. Description

The navigation controller is a major enhancement of GateIn that has several goals

- Provide non ambiguous urls for portal managed resources such as navigation. Previously different resources were possible for a single url, even worse, the set of resources available for an url was depending on one's private navigation (groups and dashboard)
- Decouple the http request from the portal request. Previously both were tightly coupled, for instance the url for a site had to begin with /public/{sitename} or /private/{sitename} .The navigation controller provides a flexible and configurable mapping.
- Provide more friendly url and give a degree of freedom for the portal administrator by letting him configure how http request should look like.

3.15.2. Controller in Action

3.15.2.1. Controller

The `WebAppController` is the component of GateIn that process http invocations and transforms them into a portal request. It has been improved with the addition of a request mapping engine (**controller**) whose role is to make the decoupling of the http request and create a portal request. The mapping engine makes two essential tasks

- Create a Map<QualifiedName, String> from an incoming http request
- Render a Map<QualifiedName, String> as an http URL

The goal of the controller (mapping engine) is to **decouple** the request processed by GateIn from the incoming HTTP request. Indeed a request contain data that determine how the request will be processed and such data can be encoded in various places in the request such as the request path or a query parameter. The controller allows GateIn route a request according to a set of parameters (a map) instead of the servlet request.

The controller configuration is declarative in an XML file, allowing easy reconfiguration of the routing table and it is processed into an internal data structure that is used to perform resolution (routing or rendering)

3.15.2.2. Building controller

The controller configuration that contains the routing rules is loaded from a file named **controller.xml** that is retrieved in the GateIn configuration directory. Its location is determined by the **gatein.controller.config** property.

WebAppController loads and initializes the mapping engine

```
<!-- conf/portal/controller-configuration.xml of portal.war -->
<component>
  <type>org.exoplatform.web.WebAppController</type>
    <init-params>
```

```
    <value-param>
      <name>controller.config</name>
      <value>${gatein.portal.controller.config}</value>
    </value-param>
  </init-params>
</component>
```

GateIn's extension project can define their own routing table, thanks to the extension mechanism.

The controller.xml can be changed and reloaded at runtime, this help the testing of different configurations easily (configuration loading operations) and provide more insight into the routing engine (the findRoutes operation). see **Rebuiding controller** for more detail

- **ReBuilding controller**

The WebAppController is annotated with `@Managed` annotations and is bound under the `view=portal,service=controller` JMX name and under the "portalcontroller" REST name.

It provides the following attributes and operations

- Attribute configurationPath : the read only the configuration path of the controller xml file
- Operation loadConfiguration : load a new configuration file from a specified xml path
- Operation reloadConfiguration : reload the configuration file
- Operation findRoutes : route the request argument through the controller and returns a list of all parameter map resolution. The argument is a request uri such as "/groups/:platform:administrators/administration/registry". It returns a string representation (`List<Map>`) of the matched routes.

3.15.2.3. Controller Configuration (controller.xml)

Most of the controller configuration cares about defining rules (Routing table - contains routes object) that will drive the resolution. Routes are processed during the controller initialization to give a tree of node. Each node

- is related to its parent with a matching rule that can either be an **exact string matching** or a **regular expression matching**
- is associated with a set of parameters

A parameter is defined by a qualified name and there are three kind of parameters

3.15.2.3.1. Route parameters

Route parameters defines a fixed value associate with a qualified name.

- Routing: route parameters allow the controller to distinguish branches easily and route the request accordingly.
- Rendering: selection occurs when always.

Example:

```
<route path="/foo">
  <route-param qname="gtn:handler">
    <value>portal</value>
  </route-param>
</route>
```

This configuration matches the request path "/foo" to the map (gtn:handler=portal). Conversely it renders the (gtn:handler=portal) map as the "/foo" url. In this example we see two concepts

- exact path matching ("/foo")
- route parameters ("gtn:handler")

3.15.2.3.2. Path parameters - Regular expression support

Path parameters allow to associate a portion of the request path with a parameter. Such parameter will match any non empty portion of text except the **/** character (that is the [^/]+ regular expression) otherwise they can be associated with a regular expression for matching specific patterns. Path parameters are mandatory for matching since they are part of the request path, however it is allowed to write regular expression matching an empty value.

- Routing: route is accepted if the regular expression is matched.
- Rendering: selection occurs when the regular expression matches the parameter.

Encoding

Path parameters may contain '/' character which is a reserved char for URI path. This case is specially handled by the navigation controller by using a special character to replace '/' literals. By default the character is the semi colon **:** and can be changed to other possible values (see controller XML schema for possible values) to give a greater amount of flexibility.

This encoding is applied only when the encoding performed for parameter having a mode set to the `default-form` value, for instance it does not happen for navigation node URI (for which **/** are encoded literally). The separator escape char can still be used but under it's percent escaped form, so by default a path parameter value containing **:** would be encoded as `%3A` and conversely the `%3A` value will be decoded as **:**.

Example:

```
<route path="/{gtn:path}">
</route>
```

No pattern defined, used the default one [^/]+

```
Routing and Rendering
Path "/foo"      <--> the map (gtn:path=foo)

Path "/foo:bar"  <--> the map (gtn:path=foo/bar)
```

If the request path contains another "/" char it will not work,default encoding mode is : **default-form**. For example:"/foo/bar" --> not matched, return empty parameter map

However this could be solved with the following configuration:

```
<route path="/{gtn:path}">
  <path-param encoding="preserve-path" qname="gtn:path">
    <pattern>.*</pattern>
  </path-param>
</route>
```

1. The .* declaration allows to match any char sequence.
2. The *preserve-path* **encoding** tells the engine that the "/" chars should be handled by the path parameter itself as they have a special meaning for the router. Without this special encoding, "/" would be rendered as the "*:" character and conversely the ":*" character would be matched as the "/" character.

3.15.2.3.3. Request parameters

Request parameters are matched from the request parameters (GET or POST). The match can be optional as their representation in the request allows it.

- Routing
  - route is accepted when a required parameter is present and matched in the request.
  - route is accepted when an optional parameter is absent or matched in the request.
- Rendering:

- selection occurs for required parameters when is the parameter is present and matched in the map.
- selection occurs for optional parameters when is the parameter is absent or matched in the map.

Example:

```
<route path="/">
  <request-param name="path" qname="gtn:path"/>
</route>
```

Request parameters are declared by a `request-param` element and by default will match any value. A request like "/?path=foo" is mapped to the (gtn:path=foo) map. The `name` attribute of the `request-param` tag defines the request parameter value. This element accepts more configuration

- a `value` or a `pattern` element a child element to match a constant or a pattern
- a `control-mode` attribute with the value `optional` or `required` to indicate if matching is mandatory or not
- a `value-mapping` attribute with the possible values `canonical`, `never-empty`, `never-null` can be used to filter filter values after matching is done. For instance a parameter configured with `value-mapping="never-empty"` and matching the empty string value will not put the empty string in the map.

3.15.2.3.4. Route precedence

The order of route declaration is important as it influence how rules are matched. Sometimes the same request could be matched by several routes and the routing table is ambiguous.

```
<route path="/foo">
  <route-param qname="gtn:handler">
    <value>portal</value>
  </route-param>
</route>
<route path="/{gtn:path}">
  <path-param encoding="preserve-path" qname="gtn:path">
    <pattern>.*</pattern>
  </path-param>
</route>
```

In that case, the request path "/foo" will always be matched by the first rule before the second rule. This can be misleading since the map (gtn:path=foo) would be rendered as "/foo" as well and would not be matched by the first rule. Such ambiguit can happen, it can be desirable or not.

3.15.2.3.5. Route nesting

Route nesting is possible and often desirable as it helps to

- factor common parameters in a common rule
- perform more efficient matching as the match of the common rule is done once for all the sub routes

```
<route path="/foo">
  <route-param qname="gtn:handler">
    <value>portal</value>
  </route-param>
  <route path="/bar">
    <route-param qname="gtn:path">
      <value>bar</value>
    </route-param>
  </route>
  <route path="/juu">
    <route-param qname="gtn:path">
      <value>juu</value>
    </route-param>
  </route>
</route>
```

- The request path "/foo/bar" is mapped to the (gtn:handler=portal,gtn:path=bar) map
- The request path "/foo/juu" is mapped to the (gtn:handler=portal,gtn:path=juu) map
- The request path "/foo" is not mapped as non leaf routes do not perform matches.

3.15.3. Integrate to GateIn WebUI framework

3.15.3.1. Routing

GateIn defines a set of parameters in its routing table, for each client request, the mapping engine processes the request path and return the defined parameters with their values as a Map<QualifiedName, String>

gtn:handler

The gtn:handler names is one of the most important qualified name as it determines which handler will take care of the request processing just after the controller has determined the parameter map. The handler value is used to make a lookup in the handler map of the controller. An handler is a class that extends the `WebRequestHandler` class and implements the `execute(ControllerContext)` method. Several handlers are available by default:

- portal : process aggregated portal requests
- upload / download : process file upload and file download
- legacy : handle legacy URL redirection (see **Legacy handler** section)
- default : http redirection to the default portal of the container
- staticResource: serve static resources like image, css or javascript... files in portal.war (see **Static Resource Handler** section)

gtn:sitetype / gtn:sitename / gtn:path

Those qualified names drives a request for the portal handler. They are used to determine which site to show and which path to resolve against a navigation. For instance the (gtn:sitetype=portal,gtn:sitename=classic,gtn:path=home) instruct the portal handler to show the home page of the classic portal site.

gtn:lang

The language in the url for the portal handler. This is a new feature offered, now language can be specified on URL. that mean user can bookmark that URL (with the information about language) or he can changed language simply by modifying the URL address

gtn:componentid / gtn:action / gtn:objectid

The webui parameters used by the portal handler for managing webui component URLs for portal applications (and not for portlet applications).

3.15.3.2. Rendering

The **controller** is designed to render a Map<QualifiedName, String> as an http URL according to its routing table. But to integrate it for using easily in WebUI Framework of GateIn, we need some more components

3.15.3.2.1. PortalURL

`PortalURL` play a similar role at the portal level, its main role is to abstract the creation of an URL for a resource managed by the portal.

```
public abstract class PortalURL<R, U extends PortalURL<U>>
{
  ...
```

```
}
```

The `PortalURL` declaration may seem a bit strange at first sight with two generic types `U` and `R` and the circular recursion of the `U` generic parameter, but it's because most of the time you will not use the `PortalURL` object but instead subclasses.

- The `R` generic type represents the type of the resource managed by the portal
- The `U` generic type is also described as **self bound generic type**. This design pattern allows a class to return subtypes of itself in the class declaring the generic type. Java Enums are based on this principle (`class Enum<E extends Enum<E>>`)

A portal URL has various methods but certainly the most important method is the `toString()` method that generates an URL representing that will target the resource associated with the url. The remaining methods are getter and setter for mutating the url configuration, those options will affect the URL representation when it is generated.

- resource : the mandatory resource associated with the url
- locale : the optional locale used in the URL allowing the creation of bookmarkable URL containing a language
- confirm : the optional confirm message displayed by the portal in the context of the portal UI
- ajax : the optional ajax option allowing an ajax invocation of the URL

Obtaining a PortalURL

`PortalURL` objects are obtained from `RequestContext` instance such as the `PortalRequestContext` or the PortletRequestContext. Usually those are obtained thanks to `getCurrentInstance` method of the `RequestContext` class:

```
RequestContext ctx = RequestContext.getCurrentInstance();
```

`PortalURL` are created via to the `createURL` method that takes as input a resource type. A resource type is usually a constant and is a type safe object that allow to retrieve `PortalURL` subclasses:

```
RequestContext ctx = RequestContext.getCurrentInstance();
PortalURL<R, U> url = ctx.createURL(type);
```

In reality you will use a concrete type constant and have instead more concrete code like:

```
RequestContext ctx = RequestContext.getCurrentInstance();
NodeURL url = ctx.createURL(NodeURL.TYPE);
```

Note

The `NodeURL.TYPE` is actually declared as `new ResourceType<NavigationResource, NodeURL>()` that can be described as a **type literal** object emulated by a Java anonymous inner class. Such literal were introduced by Neil Gafter as Super Type Token and popularized by Google Guice as Type Literal. It's an interesting way to create a literal representing a kind of Java type.

3.15.3.2.2. Node URL

The class `NodeURL` is one of the subclass of `PortalURL` that is specialized for navigation node resources:

```
public class NodeURL extends PortalURL<NavigationResource, NodeURL>
{
  ...
}
```

The good news is that the NodeURL does not carry any generic type of its super class, which means that a NodeURL is type safe and one does not have to worry about generic types.

Using a NodeURL is pretty straightforward:

```
NodeURL url = RequestContext.getCurrentInstance().createURL(NodeURL.TYPE);
url.setResource(new NavigationResource("portal", "classic, "home"));
String s = url.toString();
```

The `NodeURL` subclass contains specialized setter to make its usage even easier:

```
UserNode node = ...;
NodeURL url = RequestContext.getCurrentInstance().createURL(NodeURL.TYPE);
```

```
url.setNode(node);
String s = url.toString();
```

3.15.3.2.3. Component URL

The `ComponentURL` subclass is another specialization of `PortalURL` that allows the creation of WebUI components URLs. `ComponentURL` is commonly used to trigger WebUI events from client side:

```
<% def componentURL = uicomponent.event(...); /*or uicomponent.url(...) */ %>
  <a href=$componentURL>Click me</a>
```

Normally you should not have to deal with it as the WebUI framework has already an abstraction for managing URL known as `URLBuilder`. The `URLBuilder` implementation delegates URL creation to `ComponentURL` objects.

3.15.3.2.4. Portlet URLs

Portlet URLs API implementation delegates to the portal `ComponentURL` (via the portlet container SPI). It is possible to control the language in the URL from a `PortletURL` object by setting a property named `gtn:lang`:

- when the property value is set to a value returned by `Locale#toString()` method for locale objects having a non null language value and a null variant value, the url generated by the `PortletURL#toString()` method will contain the locale in the url.
- when the property value is set to an empty string, the generated URL will not contain a language. If the incoming URL was carrying a language, this language will be erased.
- when the property value is not set, it will not affect the generated URL.

```
PortletURL url = resp.createRenderURL();
url.setProperty("gtn:lang", "fr");
writer.print("<a href='" + url + "'>French</a>");
```

3.15.3.2.5. Webui `URLBuilder`

This internal API for creating URL works as before and delegates to the `PortletURL` API when the framework is executed in a portlet and to a `ComponentURL` API when the framework is executed in the portal context. The API has been modified to take in account the language in URL with two properties on the builder:

- locale : a locale for setting on the URL
- removeLocale : a boolean for removing the locale present on the URL

3.15.3.2.6. Groovy Templates

Within a Groovy template the mechanism is the same, however a splash of integration has been done to make creation of NodeURL simpler. A closure is bound under the `nodeurl` name and is available for invocation anytime. It will simply create a NodeURL object and return it:

```
UserNode node = ...;
NodeURL url = nodeurl();
url.setNode(node);
String s = url.toString();
```

The closure `nodeurl` is bound to Groovy template in `WebuiBindingContext`

```
// Closure nodeurl()
put("nodeurl", new Closure(this)
{
  @Override
  public Object call(Object[] args)
  {
    return context.createURL(NodeURL.TYPE);
  }
});
```

3.15.4. Changes and migration from GateIn 3.1.x

The navication controller implies a migration of the client code that is coupled to several internal APIs of GateIn. As far as we know the major impact is related to anything dealing with URL:

- Creation of an URL representing a resource managed by the portal: navigation node or ui component.
- Using http request related information

There are also changes in the configuration, because there is a change of how things are internally.

3.15.4.1. Migration of navigation node URL

Using free form node

Previously code for creating navigation node was like:

```
String uri = Util.getPortalRequestContext().getPortalURI() + "home";
```

The new code will look like

```
PortalURL nodeURL = nodeurl();
NavigationResource resource = new NavigationResource(SiteType.PORTAL,
 pcontext.getPortalOwner(), "home");
String uri = nodeURL.setResource(resource).toString();
```

Using UserNode object

```
UserNode node = ...;
String uri = Util.getPortalRequestContext().getPortalURI() + node.getURI()";
```

The new code will look like

```
UserNode node = ...;
PortalURL nodeURL = nodeurl();
String uri = nodeURL.setNode(node).toString();
```

3.15.4.2. Security changes

Security configuration change in order to keep with the flexibility added by the navigation controller. In particular the authentication does not depend anymore on path specified in `web.xml` but instead rely on the security mandated by the underlying resource. Here are the noticeable changes for security

- Authentication is now triggered on the /login URL when it does not have a username or a password specified. Therefore the URL `/login?initialURI=/classic/home` is (more or less) equivalent to `/private/classic/home`
- When a resource cannot be viewed due to security constraint
  - If the user is not logged, the authentication will be triggered

- Otherwise a special page (the usual one) will be displayed instead

3.15.4.3. Default handler

Redirection to the default portal used to be done by the `index.jsp` JSP page. This is not the case anymore, the index.jsp has been removed and the welcome file in `web.xml` was removed too. Instead a specific handler in the routing table has been configured, the sole role of this handler is to redirect the request to default portal when no other request has been matched previously:

```
<controller>
  ...
  <route path="/">
    <route-param qname="gtn:handler">
      <value>default</value>
    </route-param>
  </route>
</controller>
```

3.15.4.4. Legacy handler

Legacy urls such as `/public/...` and `/private/...` are now emulated to determine the best resource with the same resolution algorithm than before but instead of displaying the page, will make an http 302 redirection to the correct URL. This handler is present in the controller configuration. There is a noticeable difference between the two routes

- The public redirection attempt to find a node with the legacy resolution algorithm without authentication, which means that secured nodes will not be resolved and the redirection of a secured node will likely redirect to another page. For instance resolving the URL /public/classic/administration/registry path will likely resolve to another node if the user is not authenticated and is not part of the platform administrator group.
- The private redirection performs first an authentication before doing the redirection. In that case the /private/classic/administration/registry path will resolve be redirected to the /portal/groups/:platform:administrators/administration/registry page if the user has the sufficient security rights.

3.15.4.5. Static resource handler

The "/" mapping for "default" servlet is now replaced by mapping for org.exoplatform.portal.application.PortalController servlet, that mean we need a handler (**org.exoplatform.portal.application.StaticResourceRequestHandler**) to serve static resources like image, css or javascript... files in portal.war. And it should be configured,

and extended easily. Thanks to the controller.xml. This file can be overridden and can be changed and reloaded at runtime (WebAppController is MBean with some operations such as : reloadConfiguration() ...)

Declare StaticResourceHandler in controller.xml

```
<route path="/{gtn:path}">
  <route-param qname="gtn:handler">
    <value>staticResource</value>
  </route-param>
  <path-param encoding="preserve-path" qname="gtn:path">
    <pattern>.*\.(jpg|png|gif|ico|css)</pattern>
  </path-param>
</route>
```

And we don't need these kind of following mapping in portal.war's web.xml anymore :

```
<servlet-mapping>
  <servlet-name>default</servlet-name>
  <url-pattern>*.jpg</url-pattern>
</servlet-mapping>
...
```

3.15.4.6. portal.war's web.xml changes

DoLoginServlet declaration

```
<servlet>
  <servlet-name>DoLoginServlet</servlet-name>
  <servlet-class>org.exoplatform.web.login.DoLoginServlet</servlet-class>
</servlet>
<servlet-mapping>
  <servlet-name>DoLoginServlet</servlet-name>
  <url-pattern>/dologin</url-pattern>
</servlet-mapping>
```

Delare **portal servlet** as default servlet

```
<servlet-mapping>
  <servlet-name>portal</servlet-name>
  <url-pattern>/</url-pattern>
</servlet-mapping>
```

So there are some mapping declaration for portal servlet are unused, we should also remove them: **/private/* /public/* /admin/* /upload/* /download/***

Add some security constraints

```
<security-constraint>
 <web-resource-collection>
   <web-resource-name>user authentication</web-resource-name>
     <url-pattern>/dologin</url-pattern>
     <url-pattern>/groups/*</url-pattern>
     <url-pattern>/users/*</url-pattern>
...
 </web-resource-collection>
</security-constraint>
```

We can remove the index.jsp, and its declaration in web.xml now, thank to the Default request handler

```
<welcome-file-list>
 <welcome-file>/index.jsp</welcome-file>
</welcome-file-list>
```

3.15.4.7. Dashboard changes

There are several important changes to take in account

- dashboard are now bound to a single URL (/users/root by default) and dashboard pages are leaf of this path
- dashboard life cycle can be decoupled (create / destroy) from the identity creation in a configurable manner in `UserPortalConfigService` and exposed in configuration.properties under `gatein.portal.idm.createuserportal` and `gatein.portal.idm.destroyuserportal`.

- by default dashboard are not created when a user is registered
- a dashboard is created when the user access his dashboard URL

3.15.4.8. Remove unused files

1/ portal-unavailable.jsp: this file was presented before if user goes to a non-available portal. Now the server sends a 404 status code instead.

2/ portal-warning.jsp: this file is not used in any place

Portlet development

4.1. Portlet Primer

4.1.1. JSR-168 and JSR-286 overview

The Java Community Process (JCP) uses Java Specification Requests (JSRs) to define proposed specifications and technologies designed for the Java platform.

The Portlet Specifications aim at defining portlets that can be used by any *JSR-168 (Portlet 1.0)* [http://www.jcp.org/en/jsr/detail?id=168] or *JSR-286 (Portlet 2.0)* [http://www.jcp.org/en/jsr/detail?id=286] portlet container.

Most Java EE (Enterprise Edition) portals include at least one compliant portlet container, and GateIn 3.2 is no exception. In fact, GateIn 3.2 includes a container that supports both versions.

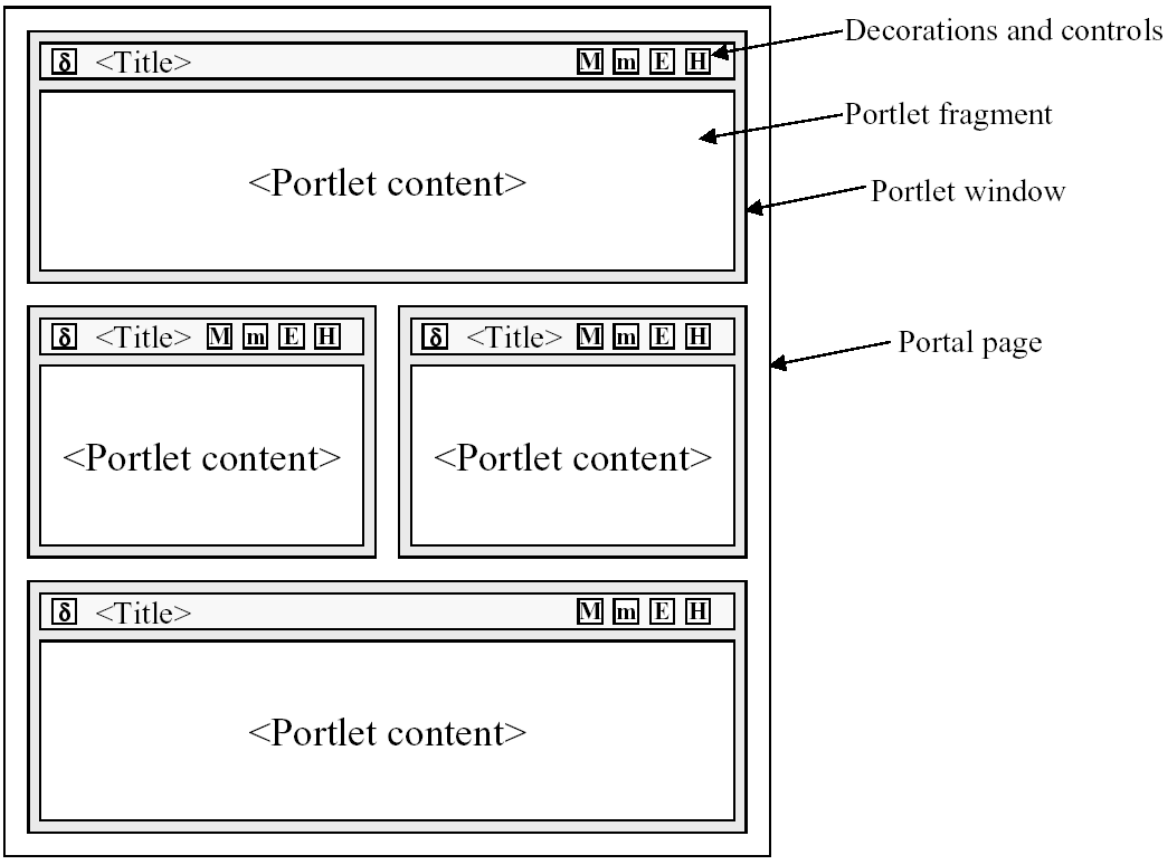
This chapter gives a brief overview of the Portlet Specifications but portlet developers are strongly encouraged to read the *JSR-286 Portlet Specification* [http://www.jcp.org/en/jsr/detail?id=286] .

GateIn 3.2 is fully JSR-286 compliant. Any JSR-168 or JSR-286 portlet operates as it is mandated by the respective specifications inside the portal.

4.1.1.1. Portal Pages

A portal can be considered as a series of web pages with different *areas* within them. Those areas contain different *windows* and each *window* contains portlet:

The diagram below visually represents this nesting:



4.1.1.2. Rendering Modes

A portlet can have different view modes. Three modes are defined by the JSR-286 specification:

View
: Generates markup reflecting the current state of the portlet.

Edit
: Allows a user to customize the behavior of the portlet.

Help
: Provides information to the user as to how to use the portlet.

4.1.1.3. Window States

Window states are an indicator of how much page space a portlet consumes on any given page. The three states defined by the JSR-168 specification are:

Normal
: A portlet shares this page with other portlets.

Minimized
: A portlet may show very little information, or none at all.

Maximized
: A portlet may be the only portlet displayed on this page.

4.1.2. Tutorials

The tutorials contained in this chapter are targeted toward portlet developers. It is also recommend that developers read and understand the *JSR-286 Portlet Specification* [http://www.jcp.org/en/jsr/detail?id=286] .

Maven

This example is using Maven to compile and build the web archive. Maven versions can be downloaded from *maven.apache.org* [http://maven.apache.org/download.html]

4.1.2.1. Deploying your first Portlet

This section describes how to deploy a portlet in GateIn 3.2. A sample portlet called `SimplestHelloWorld` is located in the `examples` directory at the root of your GateIn 3.2 binary package. This sample is used in the following examples.

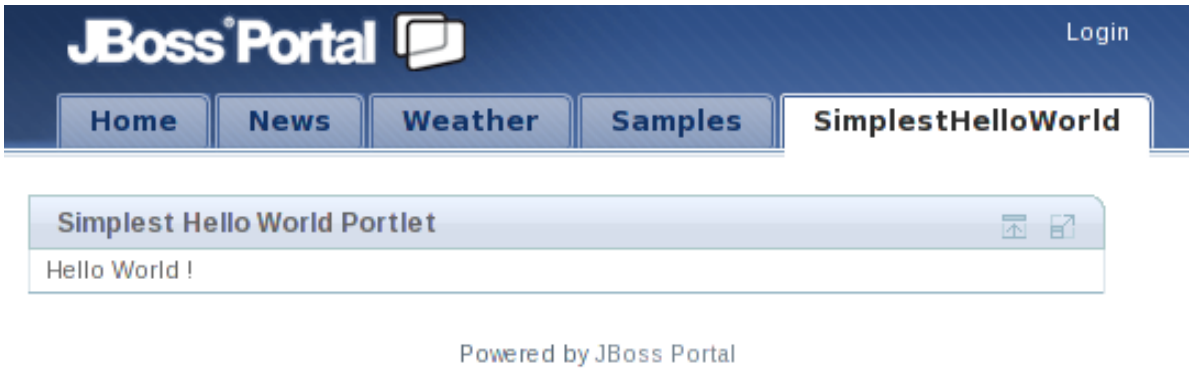
4.1.2.1.1. Compiling

To compile and package the application:

1. Navigate to the `SimplestHelloWorld` directory and execute:

```
mvn package
```

2. If the compile is successfully packaged the result will be available in: `SimplestHelloWorld/target/SimplestHelloWorld-0.0.1.war` .
3. Copy the package file into `JBOSS_HOME/server/default/deploy`.
4. Start JBoss Application Server (if it is not already running).
5. Create a new portal page and add the portlet to it.



4.1.2.1.2. Package Structure

Like other Java EE applications, GateIn 3.2 portlets are packaged in WAR files. A typical portlet WAR file can include servlets, resource bundles, images, HTML, JavaServer Pages (JSP), and other static or dynamic files.

The following is an example of the directory structure of the `SimplestHelloWorld` portlet:

```
|-- SimplestHelloWorld-0.0.1.war
|   `-- WEB-INF
|       |-- classes
|       |   `-- org
|       |       `-- gatein
|       |           `-- portal
|       |               `-- examples
|       |                   `-- portlets
|       |                       `-- SimplestHelloWorldPortlet.class          (1)
|       |-- portlet.xml                                                      (2)
|       `-- web.xml                                                         (3)
```

(1) The compiled Java class implementing *javax.portlet.Portlet* (through *javax.portlet.GenericPortlet*)

(2) This is the mandatory descriptor files for portlets. It is used during deployment..

(3) This is the mandatory descriptor for web applications.

4.1.2.1.3. Portlet Class

Below is the `SimplestHelloWorldPortlet/src/main/java/org/gatein/portal/examples/portlets/SimplestHelloWorldPortlet.java` Java source:

```
package org.gatein.portal.examples.portlets;
```

```
import java.io.IOException;
import java.io.PrintWriter;

import javax.portlet.GenericPortlet;
import javax.portlet.RenderRequest;
import javax.portlet.RenderResponse;

public class SimplestHelloWorldPortlet extends GenericPortlet                    (1)
{
  public void doView(RenderRequest request,
                     RenderResponse response) throws IOException                 (2)
  {
    PrintWriter writer = response.getWriter();                                   (3)
    writer.write("Hello World !");                                               (4)
    writer.close();                                                              (5)
  }
}
```

(1) All portlets must implement the `javax.portlet.Portlet` interface. The portlet API provides a convenient implementation of this interface.

The `javax.portlet.Portlet` interface uses the `javax.portlet.GenericPortlet` class which implements the `Portlet render` method to dispatch to abstract mode-specific methods. This makes it easier to support the standard portlet modes.

`Portlet render` also provides a default implementation for the `processAction`, `init` and `destroy` methods. It is recommended to extend `GenericPortlet` for most cases.

(2) If only the `view` mode is required, then only the `doView` method needs to be implemented. The `GenericPortletrender` implementation calls our implementation when the `view` mode is requested.

(3) Use the *RenderResponse* to obtain a writer to be used to produce content.

(4) Write the markup to display.

(5) Closing the writer.

Markup Fragments

Portlets are responsible for generating markup fragments, as they are included on a page and are surrounded by other portlets. This means that a portlet outputting HTML must not output any markup that cannot be found in a `<body>` element.

4.1.2.1.4. Application Descriptors

GateIn 3.2 requires certain descriptors to be included in a portlet WAR file. These descriptors are defined by the Jave EE (`web.xml`) and Portlet Specification (`portlet.xml`).

Below is an example of the `SimplestHelloWorldPortlet/WEB-INF/portlet.xml` file. This file must adhere to its definition in the JSR-286 Portlet Specification. More than one portlet application may be defined in this file:

```
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd
                      http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
  version="2.0">
  <portlet>
    <portlet-name>SimplestHelloWorldPortlet</portlet-name>                    (1)
    <portlet-class>                                                           (2)
      org.gatein.portal.examples.portlets.SimplestHelloWorldPortlet
    </portlet-class>
    <supports>                                                                (3)
      <mime-type>text/html</mime-type>
    </supports>
    <portlet-info>                                                            (4)
      <title>Simplest Hello World Portlet</title>
    </portlet-info>
  </portlet>
</portlet-app>
```

1. Define the portlet name. It does not have to be the class name.
2. The Fully Qualified Name (`FQN`) of your portlet class must be declared here.
3. The `<supports>` element declares all of the markup types that a portlet supports in the `render` method. This is accomplished via the `<mime-type>` element, which is required for every portlet.

   The declared MIME types must match the capability of the portlet. It allows administrators to pair which modes and window states are supported for each markup type.

   This does not have to be declared as all portlets must support the `view` portlet mode.

   Use the `<mime-type>` element to define which markup type the portlet supports. In the example above this is `text/html`. This section tells the portal to only output HTML.

④ When rendered, the portlet's title is displayed as the header in the portlet window, unless it is overridden programmatically. In the example above the title would be `Simplest Hello World Portlet`.

4.1.2.2. JavaServer Pages Portlet Example

This section discusses:

1. Adding more features to the previous example.
2. Using a JSP page to render the markup.
3. Using the portlet tag library to generate links to the portlet in different ways.
4. Using the other standard portlet modes.

1. The example used in this section can be found in the `JSPHelloUser` directory.
2. Execute `mvn package` in this directory.
3. Copy `JSPHelloUser/target/JSPHelloUser-0.0.1.war` to the `deploy` directory of JBoss Application Server.
4. Select the new `JSPHelloUser` tab in your portal.

Note

The `EDIT` button only appears with logged-in users, which is not the case in the screenshot.

4.1.2.2.1. Package Structure

The package structure in this tutorial does not differ greatly from the previous example, with the exception of adding some JSP files detailed later.

The JSPHelloUser portlet contains the mandatory portlet application descriptors. The following is an example of the directory structure of the JSPHelloUser portlet:

```
JSPHelloUser-0.0.1.war
   |-- META-INF
   |   |-- MANIFEST.MF
   |-- WEB-INF
   |   |-- classes
   |   |   `-- org
   |   |       `-- gatein
   |   |           `-- portal
   |   |               `-- examples
   |   |                   `-- portlets
   |   |                       `-- JSPHelloUserPortlet.class
   |   |-- portlet.xml
   |   `-- web.xml
   `-- jsp
       |-- edit.jsp
       |-- hello.jsp
       |-- help.jsp
       `-- welcome.jsp
```

4.1.2.2.2. Portlet Class

The code below is from the `JSPHelloUser/src/main/java/org/gatein/portal/examples/portlets/JSPHelloUserPortlet.java` Java source. It is split in different pieces.

```
package org.gatein.portal.examples.portlets;

import java.io.IOException;

import javax.portlet.ActionRequest;
```

```
import javax.portlet.ActionResponse;
import javax.portlet.GenericPortlet;
import javax.portlet.PortletException;
import javax.portlet.PortletRequestDispatcher;
import javax.portlet.RenderRequest;
import javax.portlet.RenderResponse;
import javax.portlet.UnavailableException;

public class JSPHelloUserPortlet extends GenericPortlet
{

  public void doView(RenderRequest request, RenderResponse response)
      throws PortletException, IOException                          (1)
  {
    String sYourName = (String) request.getParameter("yourname");
    if (sYourName != null)                                          (2)
    {
      request.setAttribute("yourname", sYourName);
      PortletRequestDispatcher prd =
        getPortletContext().getRequestDispatcher("/jsp/hello.jsp");  (3)
      prd.include(request, response);                               (4)
    }
    else
    {
            PortletRequestDispatcher prd = getPortletContext().getRequestDispatcher("/jsp/
welcome.jsp");
      prd.include(request, response);
    }
  }
...
```

(1) Override the *doView* method (as in the first tutorial).

(2) This entry attempts to obtain the value of the render parameter named `yourname`. If defined it should redirect to the `hello.jsp` JSP page, otherwise to the `welcome.jsp` JSP page.

(3) Get a request dispatcher on a file located within the web archive.

(4) Perform the inclusion of the markup obtained from the JSP.

As well as the `VIEW` portlet mode, the specification defines two other modes; `EDIT` and `HELP`.

These modes need to be defined in the `portlet.xml` descriptor. This will enable the corresponding buttons on the portlet's window.

The generic portlet that is inherited dispatches the different views to the methods: `doView` , `doHelp` and `doEdit`.

```
...
  protected void doHelp(RenderRequest rRequest, RenderResponse rResponse) throws PortletException, IOExce
      UnavailableException
  {
    rResponse.setContentType("text/html");
    PortletRequestDispatcher prd = getPortletContext().getRequestDispatcher("/jsp/help.jsp");
    prd.include(rRequest, rResponse);
  }

  protected void doEdit(RenderRequest rRequest, RenderResponse rResponse) throws PortletException, IOExce
      UnavailableException
  {
    rResponse.setContentType("text/html");
    PortletRequestDispatcher prd = getPortletContext().getRequestDispatcher("/jsp/edit.jsp");
    prd.include(rRequest, rResponse);
  }
...
```

Portlet calls happen in one or two phases. One when the portlet is rendered and two when the portlet is actioned *then* rendered.

An action phase is a phase where some state changes. The render phase will have access to render parameters that will be passed each time the portlet is refreshed (with the exception of caching capabilities).

The code to be executed during an action has to be implemented in the *processAction* method of the portlet.

```
...
      public void processAction(ActionRequest aRequest, ActionResponse aResp(1)onse) throws PortletException
      UnavailableException
  {
    String sYourname = (String) aRequest.getParameter("yourname");          (2)
    aResponse.setRenderParameter("yourname", sYourname);                    (3)
  }
...
```

(1) `processAction` is the method from `GernericPorlet` to override for the *action* phase.

(2) Here the parameter is retrieved through an *action URL* .

(3) The value of `yourname` is kept to make it available in the rendering phase. The previous line simply copies an action parameters to a render parameter for this example.

4.1.2.2.3. JSP files and the Portlet Tag Library

The `help.jsp` and `edit.jsp` files are very simple. Note that CSS styles are used as defined in the portlet specification. This ensures that the portlet will render well within the theme and across portal vendors.

```
<div class="portlet-section-header">Help mode</div>
<div class="portlet-section-body">This is the help mode, a convenient place to give the user some
 help information.</div>
```

```
<div class="portlet-section-header">Edit mode</div>
<div class="portlet-section-body">This is the edit mode, a convenient place to let the user change
 his portlet preferences.</div>
```

The landing page contains the links and form to call our portlet:

```
<%@ taglib uri="http://java.sun.com/portlet" prefix="portlet" %>                    (1)

<div class="portlet-section-header">Welcome !</div>

<br/>

<div class="portlet-font">Welcome on the JSP Hello User portlet,
my name is GateIn Portal. What's yours ?</div>

<br/>

<div class="portlet-font">Method 1: We simply pass the parameter to the render phase:<br/>
<a href="<portlet:renderURL><portlet:param name="yourname" value="John Doe"/>  (2)
            </portlet:renderURL>">John Doe</a></div>

<br/>

<div class="portlet-font">Method 2: We pass the parameter to the render phase, using valid XML:
Please check the source code to see the difference with Method 1.
<portlet:renderURL var="myRenderURL">                                              (3)
   <portlet:param name="yourname" value='John Doe'/>
</portlet:renderURL>
<br/>
<a href="<%= myRenderURL %>">John Doe</a></div>                                    (4)
```

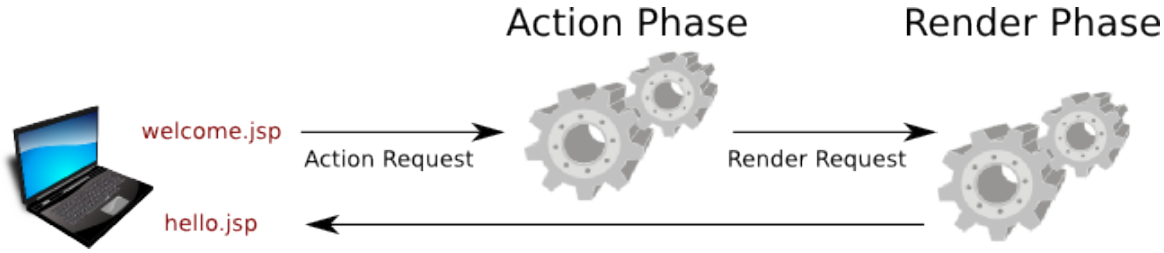
```
<br/>

<div class="portlet-font">Method 3: We use a form:<br/>

<portlet:actionURL var="myActionURL"/>                                    (5)
<form action="<%= myActionURL %>" method="POST">                          (6)
        <span class="portlet-form-field-label">Name:</span>
        <input class="portlet-form-input-field" type="text" name="yourname"/>
        <input class="portlet-form-button" type="Submit"/>
</form>
</div>
```

1. The portlet taglib, needs to be declared.
2. The first method showed here is the simplest one. `portlet:renderURL` will create a URL that calls the render phase of the current portlet and append the result at the place of the markup (within a tag). A parameter is also added directly to the URL.
3. In this method the `var` attribute is used. This avoids having one XML tag within another. Instead of printing the url the `portlet:renderURL` tag will store the result in the referenced variable (`myRenderURL`).
4. The variable `myRenderURL` is used like any other JSP variable.
5. The third method mixes form submission and action request. Again, a temporary variable is used to put the created URL into.
6. The action URL is used in HTML form.

In the third method the action phase is triggered first then the render phase is triggered, which outputs some content back to the web browser based on the available render parameters.



4.1.2.2.4. JSF example using the JBoss Portlet Bridge

In order to write a portlet using JSF a 'bridge' is needed. This software allows developers to write a portlet application as if it was a JSF application. The bridge then negotiates the interactions between the two layers.

An example of the JBoss Portlet Bridge is available in `examples/JSFHelloUser`. The configuration is slightly different from a JSP application. This example can be used as a base to configure instead of creating a new application.

As in any JSF application, the file `faces-config.xml` is required. It must contain the following information:

```
<faces-config>
...
   <application>
     <view-handler>org.jboss.portletbridge.application.PortletViewHandler</view-handler>
     <state-manager>org.jboss.portletbridge.application.PortletStateManager</state-manager>
   </application>
...
</faces-config>
```

The portlet bridge libraries must be available and are usually bundled with the `WEB-INF/lib` directory of the web archive.

The other difference compare to a regular portlet application, can be found in the portlet descriptor. All details about it can be found in the JSR-301 specification that the JBoss Portlet Bridge implements.

```
<?xml version="1.0" encoding="UTF-8"?>
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd
                      http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
  version="2.0">
  <portlet>
    <portlet-name>JSFHelloUserPortlet</portlet-name>
    <portlet-class>javax.portlet.faces.GenericFacesPortlet</portlet-class>  (1)
    <supports>
      <mime-type>text/html</mime-type>
      <portlet-mode>view</portlet-mode>
      <portlet-mode>edit</portlet-mode>
      <portlet-mode>help</portlet-mode>
    </supports>
    <portlet-info>
      <title>JSF Hello User Portlet</title>
    </portlet-info>

    <init-param>
      <name>javax.portlet.faces.defaultViewId.view</name>                (2)
      <value>/jsf/welcome.jsp</value>
    </init-param>
```

```
    <init-param>
      <name>javax.portlet.faces.defaultViewId.edit</name>                    (3)
      <value>/jsf/edit.jsp</value>
    </init-param>

    <init-param>
      <name>javax.portlet.faces.defaultViewId.help</name>                    (4)
      <value>/jsf/help.jsp</value>
    </init-param>

  </portlet>
</portlet-app>
```

(1) All JSF portlets define `javax.portlet.faces.GenericFacesPortlet` as portlet class. This class is part of the JBoss Portlet Bridge

(2) This is a mandatory parameter to define what's the default page to display.

(3) This parameter defines which page to display on the 'edit' mode.

(4) This parameter defines which page to display on the 'help' mode.

4.2. Global portlet.xml file

4.2.1. Global portlet.xml usecase

The Portlet Specification introduces PortletFilter as a standard approach to extend the behaviors of portlet objects. For example, a filter can transform the content of portlet requests and portlet responses. According to the Portlet Specification, normally there are three steps in setting up a portlet filter:

1. Implement a PortletFilter object
2. Define the filter in portlet application deployment descriptor
3. Define the filter mapping in portlet definitions

Two first steps are quite simple and easy to be done, however, at the step 3, developers/ administrators need to replicate the filter mapping in many portlet definitions, that makes work error and tedious in several use cases. The global portlet feature is designed to compensate such limitation.

4.2.2. Global metadata

The Global metadata is declared in the *portlet.xml* file conforming with Portlet 2.0 's XSD.

```
<portlet-app version="1.0" xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd http://
java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd">

</portlet-app>
```

4.2.2.1. Location

The path to the global *portlet.xml* is value of *gatein.portlet.config* in the *configuration.properties* file and varied by hosting application servers.

For Tomcat: *TOMCAT_HOME/gatein/conf/portlet.xml*

For JBoss: *JBOSS_HOME/server/default/conf/gatein/portlet.xml*

4.2.2.2. Global metadata elements

The global *portlet.xml* file conforms to the schema of the portlet deployment descriptor defined in the Portlet Specification with some restrictions. In this file, the following elements are supported:

1. Portlet Filter
2. Portlet Mode
3. Window State

4.2.2.2.1. Portlet filter

Portlet filter mappings declared in the global *portlet.xml* file are applied across portlet applications. With the XML configuration below, the filter ApplicationMonitoringFilter involves in request handling on any deployed portlet.

```
<filter>
    <filter-name>org.exoplatform.portal.application.ApplicationMonitoringFilter</filter-name>
   <filter-class>org.exoplatform.portal.application.ApplicationMonitoringFilter</filter-class>
   <lifecycle>ACTION_PHASE</lifecycle>
   <lifecycle>RENDER_PHASE</lifecycle>
   <lifecycle>EVENT_PHASE</lifecycle>
   <lifecycle>RESOURCE_PHASE</lifecycle>
</filter>
```

Application Monitoring Filter supports four lifecycle phases as the order below: *ACTION_PHASE/ EVENT_PHASE/ RENDER_PHASE/ RESOURCE_PHASE* and records

statistic information on deployed portlets. The filter alternates actual monitoring mechanism in WebUI Framework.

4.2.2.2.2. Portlet Mode and Window State

The global *portlet.xml* file is considered as an alternative place to declare custom Portlet Modes and Window States.

Gadget development

5.1. Gadgets

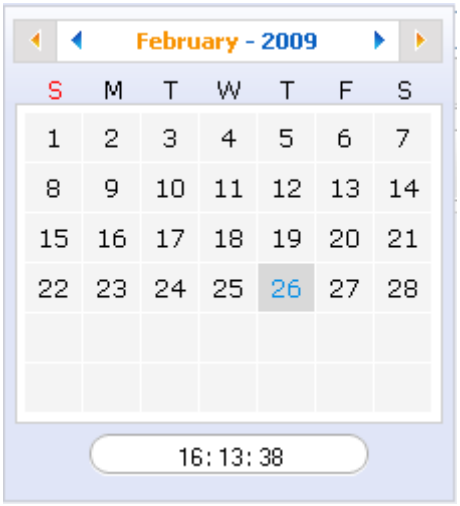
A gadget is a mini web application, embedded in a web page and running on an application server platform. These small applications help users perform various tasks.

GateIn 3.2 supports gadgets such as: Todo gadget, Calendar gadget, Calculator gadget, Weather Forecasts and and RSS Reader.

Default Gadgets:

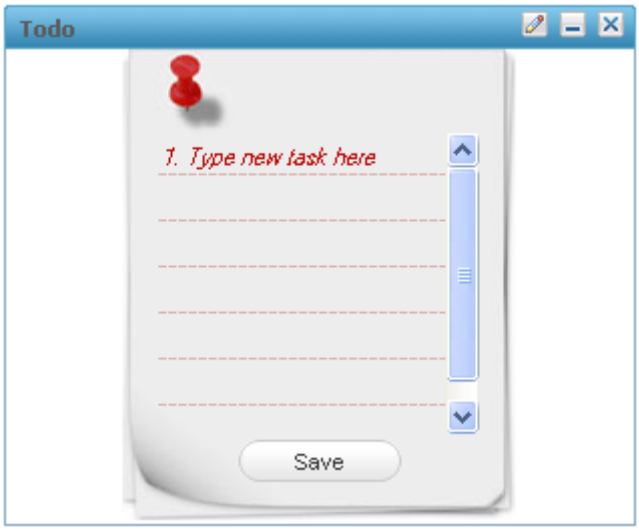
Calendar

The calendar gadget allows users to switch easily between daily, monthly and yearly view and, again, is customizable to match your portal's theme.



ToDo

This application helps you organize your day and work group. It is designed to keep track of your tasks in a convenient and transparent way. Tasks can be highlighted with different colors.



Calculator

This mini-application lets you perform most basic arithmetic operations and can be themed to match the rest of your portal.

RSS Reader

An RSS reader, or aggregator, collates content from various, user-specified feed sources and displays them in one location. This content can include, but isn't limited to, news headlines, blog posts or email. The RSS Reader gadget displays this content in a single window on your Portal page.

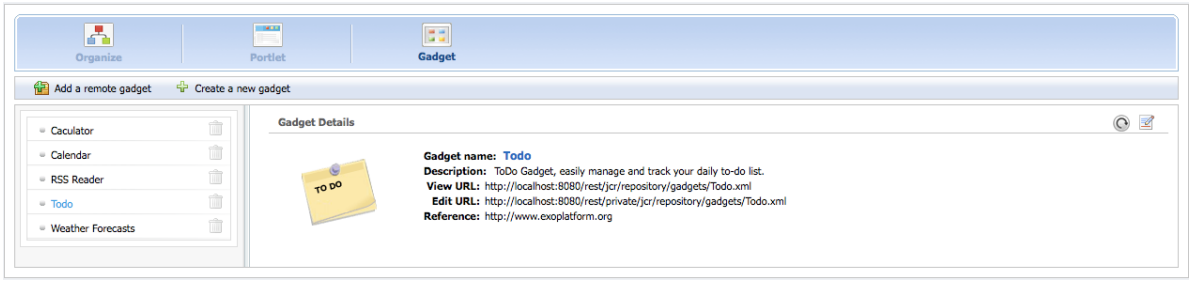
More Gadgets

Further gadgets can be obtained from the *Google Gadget* [http://www.google.com/ig/directory?synd=open] site. GateIn 3.2 is compatible with most of the gadgets available here.

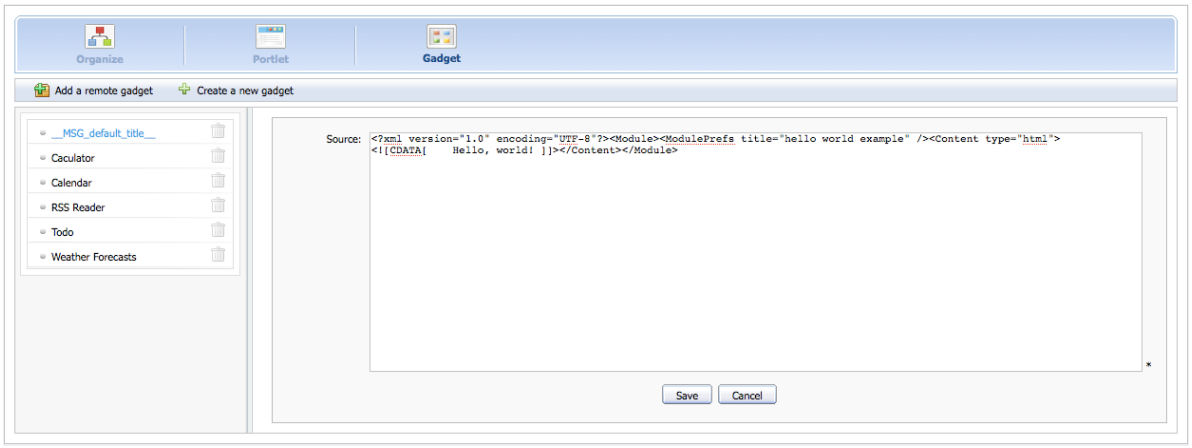
Important

The following sections require more textual information.

5.1.1. Existing Gadgets

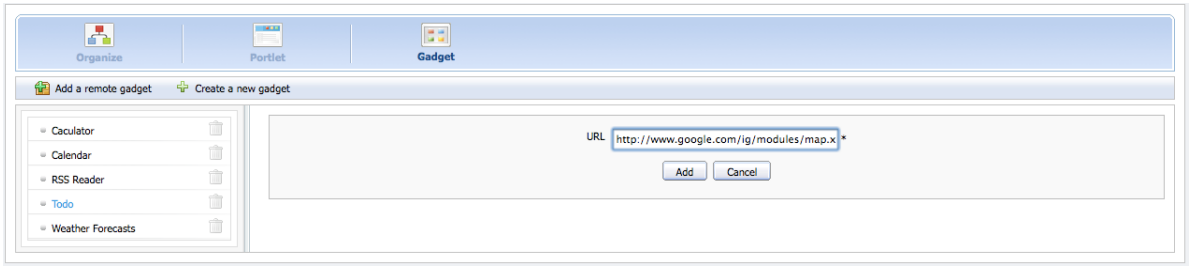


5.1.2. Create a new Gadget



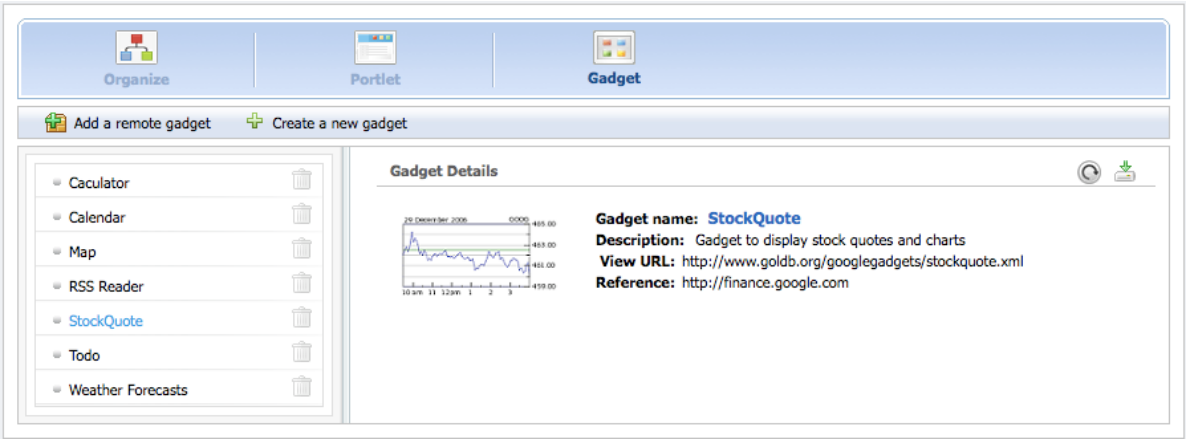
5.1.3. Remote Gadget

This is the reference to a remote gadget (stock one).



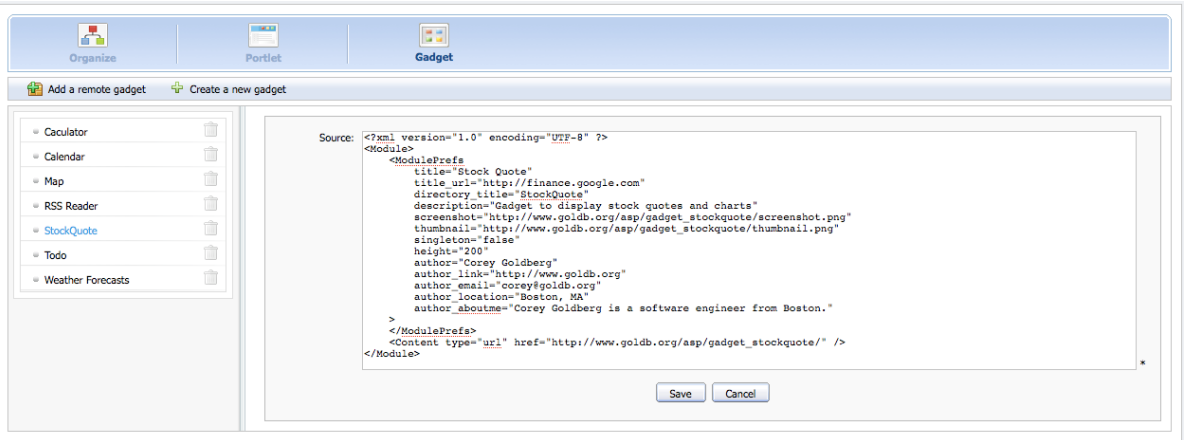
5.1.4. Gadget Importing

After referencing the gadget successfully, then import it into the local repository.



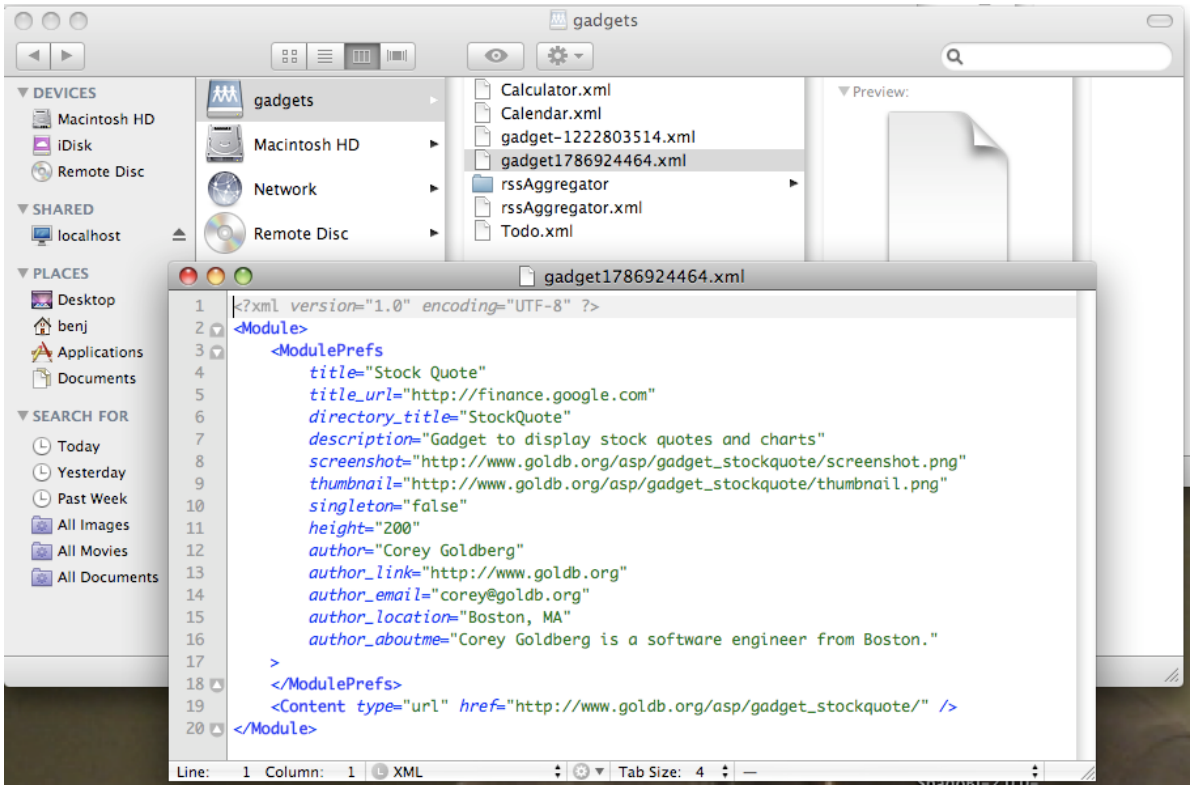
5.1.5. Gadget Web Editing

Edit it from the Web the imported Gadget to modify it:



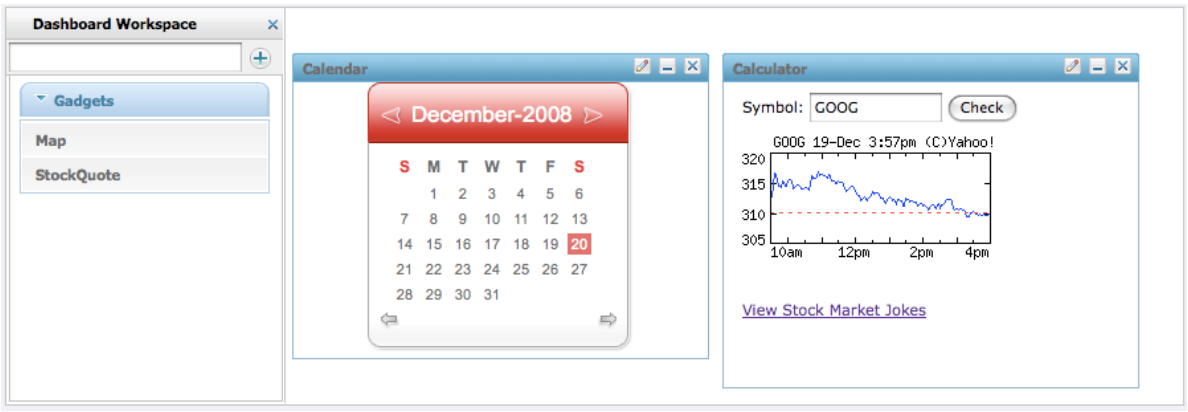
5.1.6. Gadget IDE Editing

Edit it from your IDE thanks to the WebDAV protocol:



5.1.7. Dashboard Viewing

View it from the Dashboard when you drag and drop the Gadget from listing to the dashboard.



5.2. Setup a Gadget Server

5.2.1. Virtual servers for gadget rendering

GateIn 3.2 recommends using two virtual hosts for security. If the gadget is running on a different domain than the container (the website that 'contains' the app), it is unable to interfere with the portal by modifying code or cookies.

An example would hosting the portal from **http://www.sample.com** and the gadgets from **http://www.samplemodules.com**.

To do this, configure a parameter called *gadgets.hostName*. The value is the *path/to/gadgetServer* in `GadgetRegisteryService`:

```
<component>
  <key>org.exoplatform.application.gadget.GadgetRegistryService</key>
  <type>org.exoplatform.application.gadget.jcr.GadgetRegistryServiceImpl</type>
  <init-params>
    <value-param>
      <name>gadgets.hostName</name>
      <description>Gadget server url</description>
      <value>http://localhost:8080/GateInGadgetServer/gadgets/</value>
    </value-param>
  </init-params>
</component>
```

It is also possible to have multiple rendering servers. This helps to balance the rendering load across multiple servers.

When deploying on the same server, ensure the gadget initiates before anything that calls it (for example; the webapp `GateInGadgets` which uses `org.exoplatform.application.gadget.GadgetRegister`).

5.2.2. Configuration

5.2.2.1. Security key

In GateIn, the gadget container is using three security files for authentication and authorization gadgets:

- *key.txt*
- *oauthkey.pem*
- *oauthkey_pub.pem*

By default, they are located in the *$JBOSS_HOME/server/default/conf/gatein/gadgets* or For Tomcat: *$TOMCAT_HOME/gatein/conf/gadgets* folder and are configured by system variables in the *$JBOSS_HOME/server/default/conf/gatein/configuration.properties* or For Tomcat: *$TOMCAT_HOME/gatein/conf/configuration.properties* file:

```
gatein.gadgets.securitytokenkeyfile=${gatein.conf.dir}/gadgets/key.txt
gatein.gadgets.signingkeyfile=${gatein.conf.dir}/gadgets/oauthkey.pem
```

In case you have other files, you can change these variables to point to them.

The *key.txt* file contains a secret key used to encrypt the security token used for the user authentication. When starting GateIn, this file is read via the *gatein.gadgets.securitytokenkeyfile* path. In case the *key.txt* file is not found, GateIn automatically generates a new *key.txt* one and save it to the *gatein.gadgets.securitytokenkeyfile* path.

oauthkey.pem and *oauthkey_pub.pem* are a key pair of RSA cryptography standard. *oauthkey.pem* is known as a private key and *oauthkey_pub.pem* is a public key. They are the default keys of the gadget container which OAuth gadgets will use to authorize with external service providers.

5.2.2.2. Gadget proxy and concat configuration

These servers have to be on the same domain as the gadget server. You can configure the container in `eXoGadgetServer:/WEB-INF/classes/containers/default/container.js`.

```
"gadgets.content-rewrite" : {
  "include-urls": ".*",
  "exclude-urls": "",
  "include-tags": ["link", "script", "embed", "img", "style"],
  "expires": "86400",
  "proxy-url": "http://localhost:8080/eXoGadgetServer/gadgets/proxy?url=",
  "concat-url": "http://localhost:8080/eXoGadgetServer/gadgets/concat?"
},
```

5.2.2.3. Proxy

To allow external gadgets when the server is behind a proxy, add the following code to the beginning of the JVM:

```
-Dhttp.proxyHost=proxyhostURL -Dhttp.proxyPort=proxyPortNumber -
Dhttp.proxyUser=someUserName -Dhttp.proxyPassword=somePassword
```

Authentication and Identity

6.1. Authentication and Authorization intro

6.1.1. Authentication overview

Authentication in GateIn 3.2 is based on *JAAS* [http://docs.oracle.com/javase/6/docs/technotes/guides/security/jaas/JAASRefGuide.html] and by default it's standard J2EE FORM based authentication. However authentication workflow is not so easy and straightforward, because we support many different authentication use cases, so that we can leverage authentication process according to our needs.

In GateIn 3.2 we support these kinds of authentication:

- J2EE FORM based authentication
- *RememberMe* authentication (user checks *Remember my login* checkbox in login form)
- SSO servers integration (CAS, JOSSO, OpenSSO) - more informations in *Section 6.8, "Single-Sign-On (SSO)"*
- SPNEGO authentication with Kerberos ticket - more informations in *Section 6.8.6, "SPNEGO"*
- Cluster authentication with loadbalancer or with JBoss SSO valve. See *???*

Authentication workflow consists of more HTTP requests and redirects with couple of handshakes in it. Source code related to authentication is partially in WCI module, because authentication process is little different on *Servlet 2.5* [http://www.jcp.org/en/jsr/detail?id=154] containers and *Servlet 3.0* [http://www.jcp.org/en/jsr/detail?id=315] containers.

First you can see in **deploy/gatein.ear/02portal.war/WEB-INF/web.xml** that authentication is triggered by accessing some of secured URL:

```
<security-constraint>
   <web-resource-collection>
      <web-resource-name>user authentication</web-resource-name>
      <url-pattern>/dologin</url-pattern>
      <url-pattern>/private/*</url-pattern>
      <url-pattern>/g/*</url-pattern>
      <url-pattern>/u/*</url-pattern>
   </web-resource-collection>
```

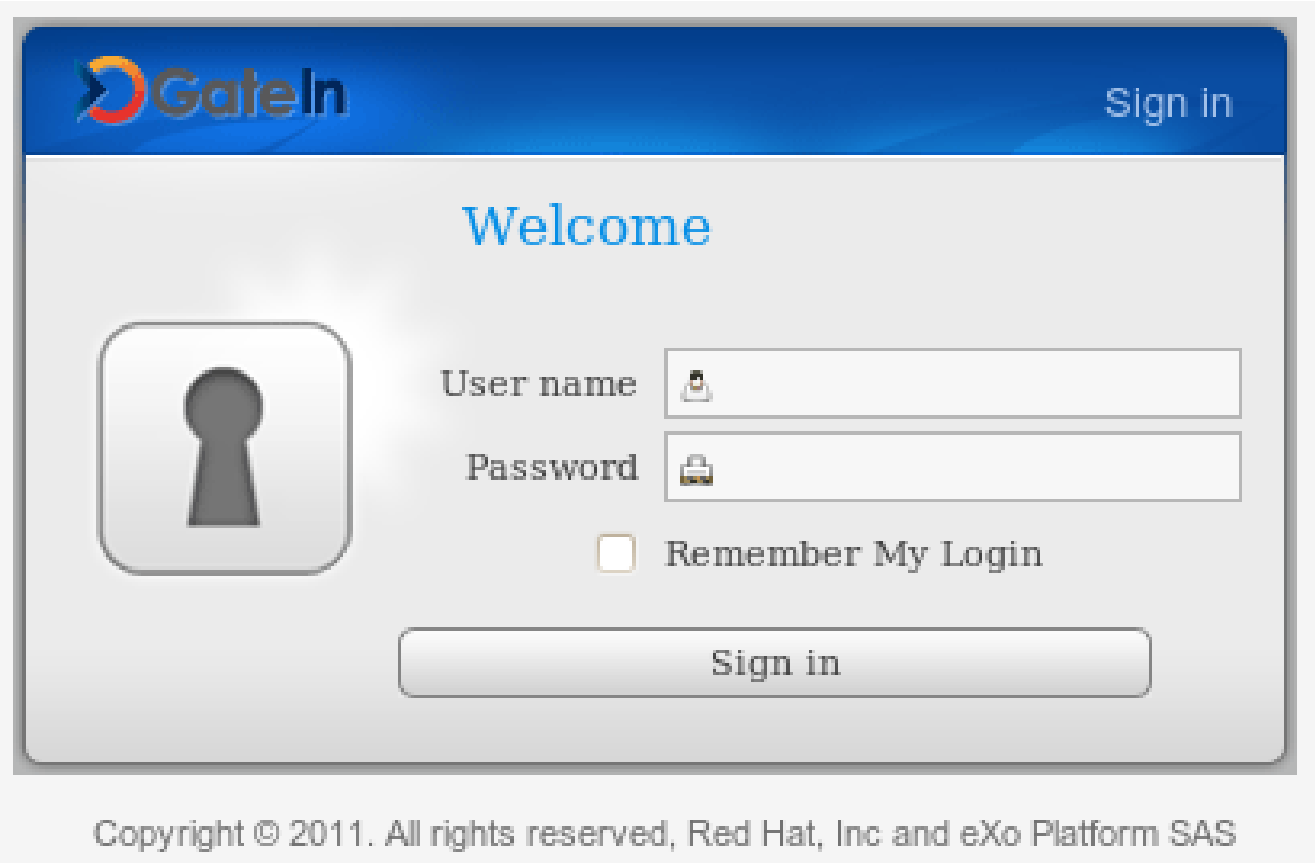
```
    <auth-constraint>
      <role-name>users</role-name>
    </auth-constraint>
    <user-data-constraint>
      <transport-guarantee>NONE</transport-guarantee>
    </user-data-constraint>
  </security-constraint>
```

This means that access to some of these URL like *http://localhost:8080/portal/dologin* will directly trigger J2EE authentication in case that user is not logged. Access to this URL also means that user needs to be in JAAS group *users*, otherwise he can authenticate but he will have HTTP error like *403 Forbidden*.

In next part of the file we can see that authentication is FORM based and it starts by redirection to */initiatelogin* URL, which is actually mapped to **InitiateLoginServlet** .

```
  <login-config>
    <auth-method>FORM</auth-method>
    <realm-name>gatein-domain</realm-name>
    <form-login-config>
      <form-login-page>/initiatelogin</form-login-page>
      <form-error-page>/errorlogin</form-error-page>
    </form-login-config>
  </login-config>
```

InitiateLoginServlet simply redirects user to login page placed in **deploy/gatein.ear/02portal.war/login/jsp/login.jsp** .



So if you want to change somehow the look and feel of this login page, you can do it in this JSP file. You can also change image or CSS placed in **deploy/gatein.ear/login/skin** .

After user submit his login form, he is redirected to login URL, which looks like *http://localhost:8080/portal/login?username=root&password=gtn&initialURI=/portal/private/classic*. This URL is mapped to **PortalLoginController** servlet, which stores credentials and redirects again to InitiateLoginServlet, which performs WCI login. WCI layer can recognize current servlet container and so that it can decide if it's old container with Servlet API 2.5 (JBoss 5, Tomcat 6) or newer with Servlet API 3.0 (JBoss 6, JBoss 7, Tomcat 7).

- **Servlet 3.0 case** - New servlet API supports programmatic authentication by calling method *HttpServletRequest.login(String username, String password)*. This will directly call JAAS authentication without need to perform any more redirects.
- **Servlet 2.5 case** - There is not standard support for programmatic authentication and so we need another redirection to special URL like *http://localhost:8080/portal/j_security_check?j_username=root&j_password=wci-ticket-1385113882&initialURI=/portal/private/classic/* which will trigger JAAS authentication. You can notice that in this case, JAAS authentication is not triggered with real password of user but with WCI ticket. WCI ticket is created by InitiateLoginServlet during WCI login and it's saved into WCI *TicketService*. The purpose of WCI ticket is to avoid using of real password in URL during redirection.

6.1.2. Login modules

So finally we are redirected to JAAS authentication. GateIn is using it's own security domain **gatein-domain** with set of predefined login modules. Login module configuration for gatein-domain is in file **deploy/gatein.ear/META-INF/gatein-jboss-beans.xml** in JBoss and in file **GATEIN_HOME/conf/jaas.conf** in Tomcat. By default we can see this login modules stack:

```
    <login-module code="org.gatein.wci.security.WCILoginModule" flag="optional">
      <module-option name="portalContainerName">portal</module-option>
      <module-option name="realmName">gatein-domain</module-option>
    </login-module>
    <login-module code="org.exoplatform.web.security.PortalLoginModule" flag="required">
      <module-option name="portalContainerName">portal</module-option>
      <module-option name="realmName">gatein-domain</module-option>
    </login-module>
                                                                    <login-
module code="org.exoplatform.services.security.jaas.SharedStateLoginModule" flag="required">
      <module-option name="portalContainerName">portal</module-option>
      <module-option name="realmName">gatein-domain</module-option>
    </login-module>

    <!-- Uncomment this part to check on each login if user is member of "/platform/users" group
 and if not
         create such membership -->
    <!--
                                                                <login-module

 flag="required">
      <module-option name="portalContainerName">portal</module-option>
      <module-option name="realmName">gatein-domain</module-option>
      <module-option name="membershipType">member</module-option>
      <module-option name="groupId">/platform/users</module-option>
    </login-module>
    -->

                                                                    <login-
module code="org.exoplatform.services.security.j2ee.JbossLoginModule" flag="required">
      <module-option name="portalContainerName">portal</module-option>
      <module-option name="realmName">gatein-domain</module-option>
    </login-module>
```

You are free to add some new login modules or completely replace existing login modules with some of your own. Few points to mention:

- It's possible to login user through existing login modules with his real password (credentials like username: *root*/ password: *gtn*), but also with WCI ticket (credentials like username: *root*/password: *wci-ticket-458791*). Login modules stack supports both of these kinds of authentication.
- Authentication through WCI ticket is used for FORM based authentication in Servlet 2.5 containers (JBoss 5 or Tomcat 6). Majority of other cases (Servlet 3.0 login, JBoss SSO valve login, login through *Crash* [http://code.google.com/p/crsh/], BASIC authentication etc) are using the case with real password.
- Authentication starts with invoke of method *login* on each login module. After all *login* methods are invoked, then authentication continue by invoke of method *commit* on each login module. Both methods *login* or *commit* can throw LoginException. If it happens, then whole authentication ends unsuccessfully, which in next turn invokes method *abort* on each login module. By returning "false" from method login, you can ensure that login module is ignored. This is not specific to EPP but it's generic to JAAS and more info about login modules in general can be found *here* [http://docs.oracle.com/javase/6/docs/technotes/guides/security/jaas/JAASRefGuide.html].

6.1.2.1. Existing login modules

Here is some brief description of existing login modules:

- **WCILoginModule** - This login module is useful when authentication is performed with JAAS password like WCI ticket. It simply validates if WCI ticket is valid and then it finds real username and password of user from WCI *TicketService* and save it into sharedState map. Username is saved under key *javax.security.auth.login.name* and Password (real password like "gtn") is saved under key *javax.security.auth.login.password*.

Note

If you trigger JAAS authentication with username/password like "root"/"gtn" and not with password like WCI ticket, then WCILoginModule is useless and it throws LoginException. But you can notice that WCILoginModule is declared as "optional" which means that login failure in WCILoginModule is not a problem for whole login process.

- **PortalLoginModule** - This login module is actually used mainly for login in cluster environment. Assumption is working session replication between two cluster nodes. After successful authentication on cluster node1 will method *commit* add flag (attribute

AUTHENTICATED_CREDENTIALS) to HTTP session and this flag can then be used to reauthentication on node2 when it executes method *login*. More info in section *Section 6.1.3.3, "Cluster login"*.

- **SharedStateLoginModule** - This login module is actually the one, which triggers real authentication of user with usage of *Authenticator* interface. It takes the username and password from sharedState map from attributes *javax.security.auth.login.name* and *javax.security.auth.login.password*. Then it calls *Authenticator.validateUser(Credential[] credentials)*, which performs real authentication of username and password against OrganizationService and portal identity database. Result of successful authentication is object *Identity*, which is saved to sharedState map under key *exo.security.identity*. More info in *Section 6.1.2.3, "Authenticator and RolesExtractor"*.

SharedStateLoginModule assumes that mentioned attributes for username and password are already placed in sharedState map, which was actually done by WCILoginModule. If attributes are not in sharedState map, SharedStateLoginModule is simply ignored (method "login" returns false).

- **JbossLoginModule** - previous login modules (like WCILoginModule and SharedStateLoginModule) are useful for authentication flow with WCI ticket. **DefaultLoginModule** (superclass of JbossLoginModule) is used for second case (authentication with real password instead of WCI ticket). First it checks if Identity object has been already created and saved into sharedState map by SharedStateLoginModule. If not, then it means that WCI ticket authentication was not successful and so it tries to login with real password of user. It also uses *Authentication.validateUser(Credential[] credentials)* for authentication check.

  In method *JbossLoginModule.commit*, we need to assign our Identity object to IdentityRegistry, which will be used later for authorization. We also need to create JAAS principals (UserPrincipal and RolesPrincipal) and assign them to our authenticated Subject. This is needed for JBoss AS server, so that it can properly recognize name of logged user and his roles on JBoss AS level.

- **CustomMembershipLoginModule** - special login module, which is disabled (commented) by default. It can be used to add user to some existing group during successful login of this user. Name of group is configurable and by default it's */platform/users* group. Login module is commented because in normal environment, users are already in /platform/users group. It's useful only for some special setups like read-only LDAP, where groups of ldap user are taken from ldap tree and so that users may not be in /platform/users group, which is needed for successful authorization.

6.1.2.1.1. SVN location of login modules

Some modules are specific for portal, but some are used also by eXo JCR and so they are part of eXo core module.

- *PortalLoginModule* - is located in GateIn 3.2 sources in *http://anonsvn.jboss.org/repos/gatein/portal/trunk/component/web/security/*

- *SharedStateLoginModule, JbossLoginModule* - these are located in eXo core sources in *http://anonsvn.jboss.org/repos/exo-jcr/core/trunk/exo.core.component.security.core/*
- *CustomMembershipLoginModule* - located in GateIn 3.2 sources in module for identity integration - *http://anonsvn.jboss.org/repos/gatein/portal/trunk/component/identity/*

6.1.2.2. Creating your own login module

Before creating your own login module, it's recommended to study source code of existing login modules to better understand whole JAAS authentication process. You need to have good knowledge so that you can properly decide where your login module should be placed and if you need to replace some existing login modules or simply attach your own module to existing chain.

We have actually two levels of authentication and overall result of JAAS authentication should properly handle both these cases:

- Authentication on application server level
- Authentication on GateIn level

6.1.2.2.1. Authentication on application server level

Application server needs to properly recognize that user is successfuly logged and it has assigned his JAAS roles. Unfortunately this part is not standardized and is specific for each AS. For example in JBoss AS, you need to ensure that JAAS Subject has assigned principal with username (UserPrincipal) and also RolesPrincipal, which has name "Roles" and it contains list of JAAS roles. This part is actually done in *JbossLoginModule.commit()*. In Tomcat, this flow is little different, which means Tomcat has it's own *TomcatLoginModule*.

After successful authentication, user needs to be at least in JAAS role "users" because this role is declared in web.xml as you saw above. JAAS roles are extracted by special algorithm from GateIn 3.2 memberships. See below in section with RolesExtractor.

6.1.2.2.2. Authentication on GateIn 3.2 level

Login process needs to create special object **org.exoplatform.services.security.Identity** and register this object into GateIn 3.2 component **IdentityRegistry**. This Identity object should encapsulate username of authenticated user, Memberships of this user and also JAAS roles. Identity object can be easily created with interface **Authenticator** as can be seen below.

So have this in mind, if you will extend or replace existing login modules.

6.1.2.3. Authenticator and RolesExtractor

Authenticator is important component in authentication process. Actually interface *org.exoplatform.services.security.Authenticator* looks like this:

```
public interface Authenticator
{

  /**
   * Authenticate user and return userId.
   *
   * @param credentials - list of users credentials (such as name/password, X509
   *        certificate etc)
   * @return userId
   */
  String validateUser(Credential[] credentials) throws LoginException, Exception;

  /**
   * @param userId.
   * @return Identity
   */
  Identity createIdentity(String userId) throws Exception;

}
```

Method *validateUser* is used to check whether given credentials (username and password) are really valid. So it performs real authentication. It returns back username if credentials are correct. Otherwise LoginException is thrown.

Method *createIdentity* is used to create instance of object *org.exoplatform.services.security.Identity*, which encapsulates all important informations about single user like:

- username
- set of Memberships (MembershipEntry objects) which user belongs to. *Membership* is object, which contains informations about *membershipType* (manager, member, validator, ...) and about *group* (/platform/users, /platform/administrators, /partners, /organization/management/executiveBoard, ...).
- set of Strings with JAAS roles of given user. JAAS roles are simple Strings, which are mapped from MembershipEntry objects. There is another special component *org.exoplatform.services.security.RolesExtractor*, which is used to map JAAS roles from MembershipEntry objects. RolesExtractor interface looks like this:

```
public interface RolesExtractor
{

  /**
   * Extracts J2EE roles from userId and|or groups the user belongs to both
   * parameters may be null
   *
   * @param userId
   * @param memberships
   */
  Set<String> extractRoles(String userId, Set<MembershipEntry> memberships);
}
```

Default implementation *DefaultRolesExtractorImpl* is based on special algorithm, which uses name of role from the root of the group (for example for role "/organization/management/something" we have JAAS role "organization"). Only exception is group "platform" where we use 2nd level as name of group. For example from group "/platform/users" we have JAAS role "users".

Example: We have user *root*, which has memberships *member:/platform/users*, *manager:/platform/administrators*, *validator:/platform/managers*, *member:/partners*, *member:/customers/acme*, *member:/organization/management/board*. In this case we will have JAAS roles: *users*, *administrators*, *managers*, *partners*, *customers*, *organization*.

Default implementation of Authenticator is *OrganizationAuthenticatorImpl*, which is implementation based on *OrganizationService*. See *Section 6.6, "Organization API"* .

You can override default implementation of mentioned interfaces Authenticator and RolesExtractor if default behaviour is not suitable for your needs. Consult documentation of *eXo kernel* for more info.

6.1.3. Different authentication workflows

6.1.3.1. RememberMe authentication

In default login dialog, you can notice that there is "Remember my login" checkbox, which users can use to persist their login on his workstation. Default validity period of RememberMe cookie is 1 day (it is configurable), and so user can be logged for whole day before he need to reauthenticate again with his credentials.

6.1.3.1.1. How does it work

- User checks the checkbox "Remember my login" on login screen of GateIn 3.2 . Then he submit the form.

- HTTP request like *http://localhost:8080/portal/login?initialURI=/portal/classic&username=root&password=gtn&rememberme=true* is send to server
- Request is processed by PortalLoginController servlet. Servlet obtains instance of *RemindPasswordTokenService* and save user credentials into JCR. It generates and returns special token (key) for later use. Then it creates cookie called *rememberme* and use returned token as value of cookie.

6.1.3.1.2. Reauthentication

- After some time, user wants to reauthenticate. Let's assume that his HTTP Session is already expired but his RememberMe cookie is still active.
- User send HTTP request to some portal page (ie. *http://localhost:8080/portal/classic*).
- There is special HTTP Filter **RememberMeFilter** configured in web.xml, which checks rememberme cookie and then it retrieves credentials of user from RemindPasswordTokenService. Now filter redirects request to PortalLoginController and authentication process goes in same way as for normal FORM based authentication.

6.1.3.1.3. RemindPasswordTokenService

This is special service used during RememberMe authentication workflow. It's configurable in file *deploy/gatein.ear/02portal.war/WEB-INF/conf/common/remindpwd-configuration.xml* . For more info, look at section *Section 6.4, “Authentication Token Configuration”*

Another thing is that you can encrypt passwords before store them into JCR. More info is in section *Section 6.2, “Password Encryption”*.

6.1.3.2. BASIC authentication

GateIn 3.2 is using FORM based authentication by default but it's not a problem with switch to different authentication type like BASIC. Only needed thing is to configure it properly in *deploy/gatein.ear/02portal.war/WEB-INF/web.xml* like this:

```
<!--
  <login-config>
    <auth-method>FORM</auth-method>
    <realm-name>gatein-domain</realm-name>
    <form-login-config>
      <form-login-page>/initiatelogin</form-login-page>
      <form-error-page>/errorlogin</form-error-page>
    </form-login-config>
  </login-config>
-->
```

```
<login-config>
  <auth-method>BASIC</auth-method>
  <realm-name>gatein-domain</realm-name>
</login-config
```

In this case user will see login dialog from browser instead of GateIn login.jsp page. JAAS authentication will be performed with real credentials of user (ie. *root*/*gtn*). WCI ticket is not used with BASIC authentication.

6.1.3.3. Cluster login

GateIn 3.2 supports automatic login propagation in cluster environment. Cluster login relies on HTTP session replication. It's useful for situations like this:

1. You have Apache loadbalancer and two portal nodes *node1* and *node2*
2. User will send request to loadbalancer and he will be redirected to node1. All his requests will be then processed on node1 (sticky session).
3. User login on loadbalancer (which is redirected to node1)
4. node1 is killed
5. User will send another HTTP request. He will now be redirected to node2 because node1 is killed. Now user will be automatically logged on node2 as well thanks to session replication, because he still has same HTTP session, which was replicated from node1 to node2. So end user shouldn't recognize any change even if his work is now done on different node of cluster.

This login workflow works thanks to *PortalLoginModule*, which is able to save special attribute into HTTP session as flag that user is already logged. Then reauthentication on node2 is working thanks to servlet filter *ClusteredSSOFilter*, which is able to automatically trigger programmatic authentication.

Note

ClusteredSSOFilter is using proprietary JBossWeb API for trigger programmatic authentication and so it's working only on JBoss AS. It is not working on other servers like Tomcat or Jetty.

There is also possibility for integration with JBoss clustered SSO valve (See *???*).

6.1.3.4. SSO login

GateIn 3.2 also supports integration with couple of well-known SSO frameworks (CAS, JOSSO, OpenSSO). When user wants login, he is not redirected to portal login form but to SSO server

login form. After successful login with SSO server, he gains ticket represented by special cookie (name of cookie differs for each SSO server). Then user is redirected back to GateIn 3.2, where we need to perform agent validation of SSO ticket against SSO server. We still need to create Identity object and bind it to IdentityRegistry (this is same as in default authentication), which is done thanks to Authenticator component.

In other words, you need to ensure that users, which are logged successfuly through SSO, needs to be also in GateIn 3.2 identity database because SSO server is used only for authentication, but authorization is handled completely by GateIn 3.2, which assumes that user exists in portal DB. If users are not in DB, Identity object won't be created and you will have 403 Forbidden errors even if you authenticate successfuly. For details about SSO integration, see *Section 6.8, "Single-Sign-On (SSO)"*.

Same applies for SPNEGO authentication (See *Section 6.8.6, "SPNEGO"*). In this case, you need to ensure that your Kerberos users are also created in GateIn 3.2 database.

6.1.4. Authorization overview

In previous section, we learned about JAAS authentication and about login modules. So we know that result of authentication are:

- JAAS Subject with principals for username (UserPrincipal) and for JAAS roles (RolesPrincipal).
- Identity object, which encapsulates username, all memberships and all JAAS roles. This Identity object is bound to IdentityRegistry component.

Authorization in GateIn 3.2 actually happens on two levels:

6.1.4.1. Servlet container authorization

First round of authorization is servlet container authorization based on secured URL from *web.xml*. We saw above in web.xml snippet that secured URL are accessible only for users from role *users*:

```
<auth-constraint>
  <role-name>users</role-name>
</auth-constraint>
```

This actually means that our user needs to be in GateIn 3.2 role */platform/users* (For details see *Section 6.1.2.3, "Authenticator and RolesExtractor"*). In other words, if we successfuly authenticate but our user is not in group /platform/users, then it means that he is not in JAAS role

users, which in next turn means that he will have authorization error **403 Forbidden** thrown by servlet container.

You can change the behaviour and possibly add some more *auth-constraint* elements into web.xml. However this protection of resources based on web.xml is not standard GateIn 3.2 way and it's mentioned here mainly for illustration purposes.

6.1.4.2. Portal level authorization

Second round of authorization is based on component **UserACL** (See *Section 3.4, "Portal Default Permission Configuration"*). We can declare access and edit permissions for portals, pages and/or portlets. UserACL is then used to check if our user has particular permissions to access or edit specified resource. Important object with informations about roles of our user is mentioned *Identity* object created during JAAS authentication.

Authorization on portal level looks like this:

- user send HTTP request to some URL in portal
- HTTP request is processed through **SetCurrentIdentityFilter**, which is declared in *deploy/gatein.ear/02portal.war/WEB-INF/web.xml*.
- SetCurrentIdentityFilter reads username of current user from *HttpServletRequest.getRemoteUser()*. Then it looks for Identity of this user in IdentityRegistry, where Identity has been saved during authentication. Found Identity is then encapsulated into **ConversationState** object and bound into ThreadLocal variable.
- UserACL is able to obtain Identity of current user from method *UserACL.getIdentity()*, which simply calls *ConversationState.getCurrent().getIdentity()* for find current Identity bound to ThreadLocal. Now UserACL has identity of user and so that it can performs any security checks.

6.2. Password Encryption

Username and passwords stored in clear text

The *Remember Me* feature of JBoss Enterprise Portal Platform uses a token mechanism to be able to authenticate returning users without requiring an explicit login. However, to be able to authenticate these users, the token needs to store the username and password in clear text in the JCR.

Administrators have two options available to ameliorate this risk:

1. The *Remember Me* feature can be disabled by removing the corresponding checkbox in: `<JBOSS_HOME>/server/<PROFILE>/deploy/gatein.ear/02portal.war/login/jsp/`

`login.jsp` and `<JBOSS_HOME>/server/<PROFILE>/deploy/gatein.ear/02portal.war/groovy/portal/webui/UILoginForm.gtmpl`.

2. Passwords can be encoded prior to being saved to the JCR. This option requires administrators to provide a custom subclass of `org.exoplatform.web.security.security.AbstractCodec` and set up a codec implementation with `CookieTokenService`:

Procedure 6.1. Encrypt Password in JCR

1. Create a javaclass similar to:

```
package org.example.codec;

import org.exoplatform.container.xml.InitParams;
import org.exoplatform.web.security.security.AbstractCodec;
import org.exoplatform.web.security.security.CookieTokenService;
import org.picocontainer.Startable;

public class ExampleCodec extends AbstractCodec implements Startable
{
  private String simpleParam;
  private CookieTokenService cookieTokenService;

  public ExampleCodec(InitParams params, CookieTokenService cookieTokenService)
  {
    simpleParam = params.getValueParam("encodingParam").getValue();
    this.cookieTokenService = cookieTokenService;
  }

  public void start()
  {
    cookieTokenService.setupCodec(this);
  }

  public void stop()
  {
  }

  /**
   * Very simple encoding algorithm used only for demonstration purposes.
   * You should use stronger algorithm in real production environment.
```

```
   */
  public String encode(String plainInput)
  {
    return plainInput + simpleParam;
  }

  public String decode(String encodedInput)
  {
    return encodedInput.substring(0, encodedInput.length() - simpleParam.length());
  }

}
```

2. Compile the class and package it into a jar file. For this example we will call the jar file `codec-example.jar`.

3. Create a `conf/portal/configuration.xml` file within the `codec-example.jar` similar to the example below. This allows the portal kernel to find and use the new codec implementation.

```
<?xml version="1.0" encoding="ISO-8859-1"?>

<configuration xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd http://
www.exoplaform.org/xml/ns/kernel_1_2.xsd"
xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">

<component>
  <key>org.example.codec.ExampleCodec</key>
  <type>org.example.codec.ExampleCodec</type>
  <init-params>
    <value-param>
      <name>encodingParam</name>
      <value>aaa</value>
    </value-param>
  </init-params>
</component>
```

```
</configuration>
```

4. Deploy the `codec-example.jar` into your `<JBOSS_HOME>/server/<PROFILE>/deploy/gatein.ear/lib/` directory.
5. Start (or restart) your JBoss Enterprise Portal Platform.

   Any passwords written to the JCR will now be encoded and not plain text.

6.3. Predefined User Configuration

6.3.1. Overview

To specify the initial Organization configuration, the content of `02portal.war:/WEB-INF/conf/organization/organization-configuration.xml` should be edited. This file uses the portal XML configuration schema. It lists several configuration plugins.

6.3.2. Plugin for adding users, groups and membership types

The plugin of type `org.exoplatform.services.organization.OrganizationDatabaseInitializer` is used to specify a list of membership types, a list of groups, and a list of users to be created.

The **checkDatabaseAlgorithm** initialization parameter determines how the database update is performed.

If its value is set to **entry** it means that each user, group and membership listed in the configuration is checked each time GateIn 3.2 is started. If the entry doesn't yet exist in the database, it is created. If **checkDatabaseAlgorithm** parameter value is set to **empty**, the configuration data will be updated to the database only if the database is empty.

6.3.3. Membership types

The predefined membership types are specified in the **membershipType** field of the **OrganizationConfig** plugin parameter.

Note

See `02portal.war:/WEB-INF/conf/organization/organization-configuration.xml` for the full content.

```
<field name="membershipType">
```

```
  <collection type="java.util.ArrayList">
    <value>
     <object type="org.exoplatform.services.organization.OrganizationConfig$MembershipType">
       <field name="type">
         <string>member</string>
       </field>
       <field name="description">
         <string>member membership type</string>
       </field>
     </object>
    </value>
    <value>
     <object type="org.exoplatform.services.organization.OrganizationConfig$MembershipType">
       <field name="type">
         <string>owner</string>
       </field>
       <field name="description">
         <string>owner membership type</string>
       </field>
     </object>
    </value>
    <value>
    <object type="org.exoplatform.services.organization.OrganizationConfig$MembershipType">
       <field name="type">
         <string>validator</string>
       </field>
       <field name="description">
         <string>validator membership type</string>
       </field>
     </object>
    </value>
  </collection>
</field>
```

6.3.4. Groups

The predefined groups are specified in the **group** field of the **OrganizationConfig** plugin parameter.

```
<field name="group">
  <collection type="java.util.ArrayList">
    <value>
      <object type="org.exoplatform.services.organization.OrganizationConfig$Group">
```

```
      <field name="name">
        <string>portal</string>
      </field>
      <field name="parentId">
        <string></string>
      </field>
      <field name="type">
        <string>hierachy</string>
      </field>
      <field name="description">
        <string>the /portal group</string>
      </field>
    </object>
  </value>
  <value>
    <object type="org.exoplatform.services.organization.OrganizationConfig$Group">
      <field name="name">
        <string>community</string>
      </field>
      <field name="parentId">
        <string>/portal</string>
      </field>
      <field name="type">
        <string>hierachy</string>
      </field>
      <field name="description">
        <string>the /portal/community group</string>
      </field>
    </object>
  </value>
  ...
 </collection>
</field>
```

6.3.5. Users

The predefined users are specified in the **membershipType** field of the **OrganizationConfig** plugin parameter.

```
<field name="user">
 <collection type="java.util.ArrayList">
  <value>
   <object type="org.exoplatform.services.organization.OrganizationConfig$User">
```

```
      <field name="userName"><string>root</string></field>
      <field name="password"><string>exo</string></field>
      <field name="firstName"><string>root</string></field>
      <field name="lastName"><string>root</string></field>
      <field name="email"><string>exoadmin@localhost</string></field>
    <field name="groups"><string>member:/admin,member:/user,owner:/portal/admin</string></
field>
    </object>
  </value>
  <value>
    <object type="org.exoplatform.services.organization.OrganizationConfig$User">
      <field name="userName"><string>exo</string></field>
      <field name="password"><string>exo</string></field>
      <field name="firstName"><string>site</string></field>
      <field name="lastName"><string>site</string></field>
      <field name="email"><string>exo@localhost</string></field>
      <field name="groups"><string>member:/user</string></field>
    </object>
  </value>
  ...
 </collection>
</field>
```

6.3.6. Plugin for monitoring user creation

The plugin of type `org.exoplatform.services.organization.impl.NewUserEventListener` specifies which groups all the newly created users should become members of. It specifies the groups and the memberships to use (while group is just a set of users, a membership type represents a user's role within a group). It also specifies a list of users that should not be processed (i.e. administrative users like 'root').

Note

The terms 'membership' and 'membership type' refer to the same thing, and are used interchangeably.

```
<component-plugin>
 <name>new.user.event.listener</name>
 <set-method>addListenerPlugin</set-method>
 <type>org.exoplatform.services.organization.impl.NewUserEventListener</type>
 <description>this listener assign group and membership to a new created user</description>
 <init-params>
```

```
    <object-param>
      <name>configuration</name>
      <description>description</description>
      <object type="org.exoplatform.services.organization.impl.NewUserConfig">
        <field  name="group">
          <collection type="java.util.ArrayList">
            <value>
              <object type="org.exoplatform.services.organization.impl.NewUserConfig$JoinGroup">
                <field name="groupId"><string>/user</string></field>
                <field name="membership"><string>member</string></field>
              </object>
            </value>
          </collection>
        </field>
        <field  name="ignoredUser">
          <collection type="java.util.HashSet">
            <value><string>exo</string></value>
            <value><string>root</string></value>
            <value><string>company</string></value>
            <value><string>community</string></value>
          </collection>
        </field>
      </object>
    </object-param>
  </init-params>
</component-plugin>
```

6.4. Authentication Token Configuration

6.4.1. What is Token Service?

Token Service is used in authentication.

The token system prevents user account information being sent in clear text mode within inbound requests. This increases authentication security.

Token service allows administrators to create, delete, retrieve and clean tokens as required. The service also defines a validity period of any given token. The token becomes invalid once this period expires.

6.4.2. Implementing the Token Service API

All token services used in GateIn 3.2 authentication must be implemented by subclassing an **AbstractTokenService** abstract class. The following **AbstractTokenService** methods represent the contract between authentication runtime, and a token service implementation.

```
 public Token getToken(String id) throws PathNotFoundException, RepositoryException;
public Token deleteToken(String id) throws PathNotFoundException, RepositoryException;
 public String[] getAllTokens();
 public long getNumberTokens() throws Exception;
 public String createToken(Credentials credentials) throws IllegalArgumentException,NullPointerException;
 public Credentials validateToken(String tokenKey, boolean remove) throws NullPointerException;
```

6.4.3. Configuring token services

Token services configuration includes specifying the token validity period. The token service is configured as a portal component (in portal scope, as opposed to root scope - more about that in Foundations chapter).

In the example below, *CookieTokenService* is a subclass of **AbstractTokenService** so it has a property which specifies the validity period of the token.

The token service will initialize this validity property by looking for an `init-param` named **service.configuration**.

This property must have three values.

```
<component>
  <key>org.exoplatform.web.security.security.CookieTokenService</key>
  <type>org.exoplatform.web.security.security.CookieTokenService</type>
  <init-params>
   <values-param>
     <name>service.configuration</name>
     <value>jcr-token</value>                    (1)
     <value>7</value>                            (2)
     <value>DAY</value>                          (3)
    </values-param>
  </init-params>
</component>
```

1. Service name
2. Amount of time
3. Unit of time

In this case, the service name is **jcr-token** and the token expiration time is one week.

GateIn 3.2 supports *four* time units:

1. *SECOND*

2. *MINUTE*

3. *HOUR*

4. *DAY*

6.5. PicketLink IDM integration

GateIn 3.2 uses PicketLink IDM component to keep the necessary identity information (users, groups, memberships, etc.). While legacy interfaces are still used (org.exoplatform.services.organization) for identity management, there is a wrapper implementation that delegates to PicketLink IDM framework.

This section doesn't provide information about PicketLink IDM and its configuration. Please, refer to the appropriate project documentation (*http://jboss.org/picketlink/IDM.html*) for further information.

Note

It is important to fully understand the concepts behind this framework design before changing the default configuration.

The identity model represented in '**org.exoplatform.services.organization**' interfaces and the one used in **PicketLink IDM** have some major differences.

TODO: tell more about org.exoplatform.services.organization

For example: **PicketLink IDM** provides greater abstraction. It is possible for groups in **IDM** framework to form memberships with many parents (which requires recursive ID translation), while GateIn model allows only pure tree-like membership structures.

Additionally, GateIn *membership* concept needs to be translated into the IDM *Role* concept. Therefore **PicketLink IDM** model is used in a limited way. All these translations are applied by the integration layer.

6.5.1. Configuration files

The main configuration file is **idm-configuration.xml**:

```
<configuration xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
               xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd http://
www.exoplaform.org/xml/ns/kernel_1_2.xsd"
        xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">

  <component>                                                    (1)
```

```
      <key>org.exoplatform.services.organization.idm.PicketLinkIDMService</key>
    <type>org.exoplatform.services.organization.idm.PicketLinkIDMServiceImpl</type>
    <init-params>
      <value-param>
        <name>config</name>
        <value>war:/conf/organization/idm-config.xml</value>
      </value-param>
      <value-param>
        <name>portalRealm</name>
        <value>realm${container.name.suffix}</value>
      </value-param>
     </init-params>
  </component>


  <component>
    <key>org.exoplatform.services.organization.OrganizationService</key>  (2)
      <type>org.exoplatform.services.organization.idm.PicketLinkIDMOrganizationServiceImpl</
type>
    <init-params>
    <object-param>
      <name>configuration</name>
      <object type="org.exoplatform.services.organization.idm.Config">
        <field name="useParentIdAsGroupType">
          <boolean>true</boolean>
        </field>

        <field name="forceMembershipOfMappedTypes">
          <boolean>true</boolean>
        </field>

        <field name="pathSeparator">
          <string>.</string>
        </field>

        <field name="rootGroupName">
          <string>GTN_ROOT_GROUP</string>
        </field>

        <field name="groupTypeMappings">
          <map type="java.util.HashMap">
            <entry>
              <key><string>/</string></key>
              <value><string>root_type</string></value>
```

```
          </entry>

          <!-- Sample mapping -->
          <!--
          <entry>
            <key><string>/platform/*</string></key>
            <value><string>platform_type</string></value>
          </entry>
          <entry>
            <key><string>/organization/*</string></key>
            <value><string>organization_type</string></value>
          </entry>
          -->

        </map>
      </field>

      <field name="associationMembershipType">
        <string>member</string>
      </field>

      <field name="ignoreMappedMembershipType">
        <boolean>false</boolean>
      </field>
    </object>
  </object-param>
 </init-params>


 </component>

</configuration>
```

1 The **org.exoplatform.services.organization.idm.PicketLinkIDMServiceImpl** service has the following options:

config
    (value-param)

    PicketLink IDM configuration file

hibernate.properties
    (properties-param)

A list of hibernate properties used to create SessionFactory that will be injected to JBoss Identity IDM configuration registry.

hibernate.annotations
A list of annotated classes that will be added to Hibernate configuration.

hibernate.mappings
A list of xml files that will be added to hibernate configuration as mapping files.

jndiName
(value-param)

If the 'config' parameter is not provided, this parameter will be used to perform JNDI lookup for IdentitySessionFactory

portalRealm
(value-param)

The realm name that should be used to obtain proper IdentitySession. The default is 'PortalRealm'.

2 The **org.exoplatform.services.organization.idm.PicketLinkIDMOrganizationServiceImpl** key is a main entrypoint implementing **org.exoplatform.services.organization.OrganizationService** and is dependant on **org.exoplatform.services.organization.idm.PicketLinkIDMService**

org.exoplatform.services.organization.idm.PicketLinkIDMOrganizationServiceImpl service has the following options defined as fields of object-param of type **org.exoplatform.services.organization.idm.Config**:

defaultGroupType
The name of the PicketLink IDM GroupType that will be used to store groups. The default is 'GTN_GROUP_TYPE'.

rootGroupName
The name of the PicketLink IDM Group that will be used as a root parent. The default is 'GTN_ROOT_GROUP'

passwordAsAttribute
This parameter specifies if a password should be stored using PicketLink IDM Credential object or as a plain attribute. The default is false.

useParentIdAsGroupType
This parameter stores the parent ID path as a group type in PicketLink IDM for any IDs not mapped with a specific type in 'groupTypeMappings'. If this option is set to false, and no mappings are provided under 'groupTypeMappings', then only one group with the given name can exist in the GateIn 3.2 group tree.

pathSeparator
: When 'userParentIdAsGroupType is set to true, this value will be used to replace all "/" characters in IDs. The "/" character is not allowed to be used in group type name in PicketLink IDM.

associationMembershipType
: If this option is used, then each Membership, created with MembrshipType that is equal to the value specified here, will be stored in PicketLink IDM as simple Group-User association.

groupTypeMappings
: This parameter maps groups added with GateIn 3.2 API as children of a given group ID, and stores them with a given group type name in PicketLink IDM.

  If the parent ID ends with "/*", then all child groups will have the mapped group type. Otherwise, only direct (first level) children will use this type.

  This can be leveraged by LDAP if LDAP DN is configured in PicketLink IDM to only store a specific group type. This will then store the given branch in GateIn 3.2 group tree, while all other groups will remain in the database.

forceMembershipOfMappedTypes
: Groups stored in PicketLink IDM with a type mapped in 'groupTypeMappings' will automatically be members under the mapped parent. Group relationships linked by PicketLink IDM group association will not be necessary.

  This parameter can be set to false if all groups are added via GateIn 3.2 APIs. This may be useful with LDAP configuration as, when set to true, it will make every entry added to LDAP appear in GateIn 3.2. This, however, is not true for entries added via GateIn 3.2 management UI.

ignoreMappedMembershipType
: If "associationMembershipType" option is used, and this option is set to true, then Membership with MembershipType configured to be stored as PicketLink IDM association will not be stored as PicketLink IDM Role.

Additionally, **JBossIDMOrganizationServiceImpl** uses those defaults to perform identity management operations

- GateIn 3.2 User interface properties fields are persisted in JBoss Identity IDM using those attributes names: firstName, lastName, email, createdDate, lastLoginTime, organizationId, password (if password is configured to be stored as attribute)
- GateIn 3.2 Group interface properties fields are persisted in JBoss Identity IDM using those attributes names: label, description

- GateIn 3.2 MembershipType interface properties fields are persisted in JBoss Identity IDM using those RoleType properties: description, owner, create_date, modified_date

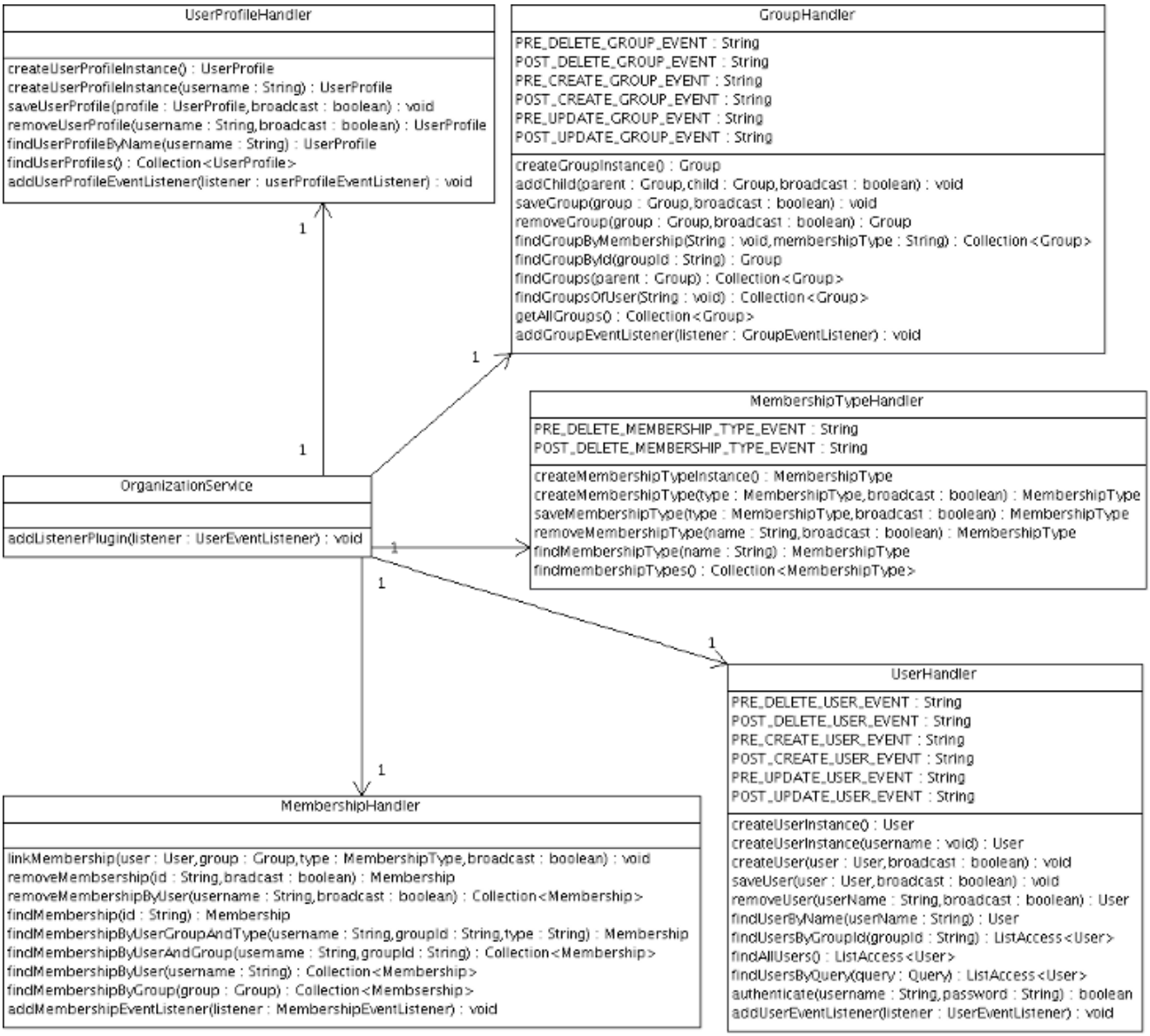
A sample **PicketLink IDM** configuration file is shown below. To understand all the options it contains, please refer to the PicketLink IDM Reference Guide

```
<jboss-identity xmlns="urn:jboss:identity:idm:config:v1_0_beta"
                xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                xsi:schemaLocation="urn:jboss:identity:idm:config:v1_0_alpha identity-config.xsd">
   <realms>
      <realm>
         <id>PortalRealm</id>
         <repository-id-ref>PortalRepository</repository-id-ref>
         <identity-type-mappings>
            <user-mapping>USER</user-mapping>
         </identity-type-mappings>
      </realm>
   </realms>
   <repositories>
      <repository>
         <id>PortalRepository</id>
         <class>org.jboss.identity.idm.impl.repository.WrapperIdentityStoreRepository</class>
         <external-config/>
         <default-identity-store-id>HibernateStore</default-identity-store-id>
         <default-attribute-store-id>HibernateStore</default-attribute-store-id>
      </repository>
   </repositories>
   <stores>
      <attribute-stores/>
      <identity-stores>
         <identity-store>
            <id>HibernateStore</id>
            <class>org.jboss.identity.idm.impl.store.hibernate.HibernateIdentityStoreImpl</class>
            <external-config/>
            <supported-relationship-types>
               <relationship-type>JBOSS_IDENTITY_MEMBERSHIP</relationship-type>
               <relationship-type>JBOSS_IDENTITY_ROLE</relationship-type>
            </supported-relationship-types>
            <supported-identity-object-types>
               <identity-object-type>
                  <name>USER</name>
                  <relationships/>
                  <credentials>
```

```
                    <credential-type>PASSWORD</credential-type>
                </credentials>
                <attributes/>
                <options/>
            </identity-object-type>
        </supported-identity-object-types>
        <options>
            <option>
                <name>hibernateSessionFactoryRegistryName</name>
                <value>hibernateSessionFactory</value>
            </option>
            <option>
                <name>allowNotDefinedIdentityObjectTypes</name>
                <value>true</value>
            </option>
            <option>
                <name>populateRelationshipTypes</name>
                <value>true</value>
            </option>
            <option>
                <name>populateIdentityObjectTypes</name>
                <value>true</value>
            </option>
            <option>
                <name>allowNotDefinedAttributes</name>
                <value>true</value>
            </option>
            <option>
                <name>isRealmAware</name>
                <value>true</value>
            </option>
        </options>
    </identity-store>
  </identity-stores>
 </stores>
</jboss-identity>
```

6.6. Organization API

The `exo.platform.services.organization` package has five main components: user, user profile, group, membership type and membership. There is an additional component that serves as an entry point into Organization API - `OrganizationService` component, that provides handling functionality for the five components.



The `User` component contains basic information about a user - such as username, password, first name, last name, and email. The `User Profile` component contains extra information about a user, such as user's personal information, and business information. You can also add additional information about a user if your application requires it. The `Group` component contains a group graph. The `Membership Type` component contains a list of predefined membership types. Finally, the `Membership` component connects a User, a Group and a Membership Type.

A user can have one or more memberships within a group, for example: user A can have the 'member' and 'admin' memberships in group /user. A user belongs to a group if he has at least one membership in that group.

Exposing the Organization API to developers the OrganizationService component provides developers with access to handler objects for managing each of the five components - UserHandler, UserProfileHandler, GroupHandler, MembershipTypeHandler, and MembershipHandler.

The five central API components are really designed like persistent entities, and handlers are really specified like data access objects (DAO).

Organization API simply describes a contract, meaning it is not a concrete implementation. The described components are interfaces, allowing for different concrete implementations. In practial terms that means, you can replace the existing implementation with a different one.

6.7. Accessing User Profile

The following code retrieves the details for a logged-in user:

```
// Alternative context: WebuiRequestContext context =
 WebuiRequestContext.getCurrentInstance() ;
PortalRequestContext context = PortalRequestContext.getCurrentInstance() ;
// Get the id of the user logged
String userId = context.getRemoteUser();
// Request the information from OrganizationService:
OrganizationService orgService = getApplicationComponent(OrganizationService.class) ;
if (userId != null)
  {
  User user = orgService.getUserHandler().findUserByName(userId) ;
  if (user != null)
  {
    String firstName = user.getFirstName();
    String lastName = user.getLastName();
    String email = user.getEmail();
  }
}
```

Below are two alternatives for retrieving the Organization Service:

```
OrganizationService service = (OrganizationService)
  ExoContainerContext.getCurrentContainer().getComponentInstanceOfType(OrganizationService.class);
```

```
OrganizationService service = (OrganizationService)
  PortalContainer.getInstance().getComponentInstanceOfType(OrganizationService.class);
```

6.8. Single-Sign-On (SSO)

6.8.1. Overview

GateIn 3.2 provides some form of Single Sign On (SSO) as an integration and aggregation platform.

When logging into the portal users gain access to many systems through portlets using a single identity. In many cases, however, the portal infrastructure must be integrated with other SSO enabled systems. There are many different Identity Management solutions available. In most cases each SSO framework provides a unique way to plug into a Java EE application.

6.8.1.1. Prerequisites

In this tutorial, the SSO server is installed in a Tomcat installation. Tomcat can be obtained from *http://tomcat.apache.org*.

All the packages required for setup can be found in a latest zip file located under *this directory* [https://repository.jboss.org/nexus/content/groups/public/org/gatein/sso/sso-packaging/]. At this moment, latest version is *here* [https://repository.jboss.org/nexus/content/groups/public/org/gatein/sso/sso-packaging/1.1.2-Beta02/sso-packaging-1.1.2-Beta02.zip]. In this document, $GATEIN_SSO_HOME is called as the directory where the file is extracted.

Users are advised to not run any portal extensions that could override the data when manipulating the `gatein.ear` file directly.

6.8.2. Enabling SSO using JBoss SSO Valve

The JBoss SSO valve is useful to authenticate a user on one GateIn 3.2 node in a cluster and have that authentication automatically carry across to other nodes in the cluster.

This authentication can also be used in any other web applications which may require authentication, **provided that these applications use same roles as the main portal instance**. Attempting to use an SSO authentication in an application that uses different roles may create authorization errors (**403** errors, for example).

Note

This behaviour is coming from the fact that same JAAS principal is added by SSO valve to all HTTP requests, even to other web applications. So the same roles are required because of it. There is alternative that you can configure SSO valve with parameter **requireReauthentication=true** , which will force SSO valve to perform reauthentication with saved credentials in each HTTP request against security domain of particular web application where the request is coming. This will enforce that new principal for that web application will be created with updated roles for that web application. In other words, when requireReauthentication is **false** (default state), you need to have same roles among web applications. When requireReauthentication is **true** you need to have same username and passwords.

More info about the JBoss SSO valve can be found at *http://community.jboss.org/wiki/JBossWebSingleSignOn*.

To successfully implement SSO integration, do the following:

Procedure 6.2. SSO Integration

1. Open the `/<JBOSS_HOME>/server/<PROFILE>/deploy/jbossweb.sar/server.xml` file and uncomment one of the two `Valve` entries:

   - For a *non-clustered* implementation, uncomment:

   ```
   <Valve className="org.apache.catalina.authenticator.SingleSignOn" />
   ```

   - For a *clustered* implementation, uncomment:

   ```
   <Valve className="org.jboss.web.tomcat.service.sso.ClusteredSingleSignOn" />
   ```

2. For integration of SSO valve among different nodes of cluster, you need to ensure that all these nodes share the same domain (for example *node1.yourdomain.com* and *node2.yourdomain.com*). This domain needs to be configured with parameter **cookieDomain** of SSO valve. Thing is that SSO valve is adding cookie **JSESSIONIDSSO**, which is by default bound only to host where the request is coming. When used cookieDomain parameter, cookie is bound to domain (like *yourdomain.com*), which will ensure that it is shared among both hosts *node1.yourdomain.com* and *node2.yourdomain.com*. So in this case, valve configuration can look like this:

```
<Valve className="org.jboss.web.tomcat.service.sso.ClusteredSingleSignOn"
  cookieDomain="yourdomain.com" />
```

3. Another important thing is that both cluster nodes needs to be on same cluster (using same parameter **-g** and same parameter **-u** and also using parameter **-Dexo.profiles=cluster**). It's also needed for them to share the same NFS directory and same database and apply all the configuration needed for GateIn 3.2 cluster.

Testing SSO in a physical cluster. In this example, we will try to simulate testing on more physical machines by simply using virtual hosts on single machine.

1. If you are on Linux, you can configure file **/etc/hosts** to contain these lines:

```
127.0.1.1 machine1.yourdomain.com
127.0.1.2 machine2.yourdomain.com
```

2. Open the `<JBOSS_HOME>/server/all/deploy/jbossweb.sar/server.xml` file.

3. Uncomment the line:

```
<!--
<Valve className="org.jboss.web.tomcat.service.sso.ClusteredSingleSignOn" />
-->
```

4. And edit it to match the following:

```
<Valve className="org.jboss.web.tomcat.service.sso.ClusteredSingleSignOn"
  cookieDomain="yourdomain.com" />
```

   This will ensure the `JSESSIONIDSSO` cookie is used in the correct domain, allowing the SSO authentication to occur.

5. Copy server configuration **all** and create another two configurations **node1** and **node2** from it.

6. Start both cluster nodes with commands:

```
./run.sh -c node1 -b machine1.yourdomain.com -Dexo.profiles=cluster -
Djboss.messaging.ServerPeerID=0 &
./run.sh -c node2 -b machine2.yourdomain.com -Dexo.profiles=cluster -
Djboss.messaging.ServerPeerID=1 &
```

7. Let's go to *http://machine1.yourdomain.com:8080/portal* and login as some user.

8. Access some private url on second host like *http://machine2.yourdomain.com:8080/portal/dologin*. Now you should be logged directly into machine2 thanks to SSO valve.

9. Logout from SSO initiating machine1.yourdomain.com should also logged you out from other cluster nodes. So you should be logout directly from machine2 as well.

Enabling SSO with Other Web Applications. As mentioned earlier, in order to use SSO authentication between JBoss Enterprise Portal Platform instances and other web applications, the roles defined in the web application must match those used in the portal instance (unless you have *requireReauthentication=true* as mentioned above).

As an example, to use the SSO Valve to authenticate a user in both a portal instance and the JMX Console, the following actions would be required:

Procedure 6.3.

- Open the `<JBOSS_HOME>/server/node1/deploy/jmx-console.war/WEB-INF/web.xml` file and edit it as follows:

a. Change the *<role-name>* entry in the *<auth-constraint>* element (line 110) from JBossAdmin to users:

```
<auth-constraint>
  <!--<role-name>JBossAdmin</role-name>-->
  <role-name>users</role-name>
</auth-constraint>
```

b. Change the *<role-name>* entry in the *<security-role>* element (line 120) from JBossAdmin to users

```
<security-role>
  <!--<role-name>JBossAdmin</role-name>-->
  <role-name>users</role-name>
</security-role>
```

Testing SSO With Other Web Applications. To test that SSO authentication is enabled from portal instances to other web applications (in this case, the JMX Console), do the following:

Procedure 6.4. Test SSO Between Portal and JMX Console

1. Start a portal instance on one node:

```
./run.sh -c node1 -b machine1.yourdomain.com -Dexo.profiles=cluster -Djboss.messaging.ServerPeerID=0 &
```

2. Navigate to *http://machine1.yourdomain.com:8080/portal/private/classic* and authenticate with the pre-configured user account " root " (password " gtn ").

3. Navigate to *http://machine1.yourdomain.com:8080/jmx-console*. You should be automatically authenticated into the JMX Console.

Using SSO to Authenticate From the Public Page. The previous configuration changes in this section are useful if a user is using a secured URL (*http://localhost:8080/portal/private/classic*, for example) to log in to the portal instance.

Further changes are needed however, if SSO authentication is required to work with the **Sign In** button on the front page of the portal (*http://localhost:8080/portal/classic*).

To enable this functionality, the **Sign In** link must redirect to some secured URL, which will ensure that JAAS authentication will be enforced directly without showing login dialog.

Procedure 6.5. Redirect to Use SSO Valve Authentication

1. Open the `<JBOSS_HOME>/server/<PROFILE>/deploy/gatein.ear/web.war/groovy/groovy/webui/component/UIBannerPortlet.gtml` file and edit the line:

```
<a class="Login"
  onclick="$signInAction"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
```

   To read:

```
<a class="Login"
  href="/portal/private/classic"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
```

2. Open the `<JBOSS_HOME>/server/<PROFILE>/deploy/gatein.ear/web.war/groovy/portal/webui/component/UILogoPortlet.gtmpl` file and change the line:

```
<a onclick="$signInAction"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
```

   To read:

```
<a href="/portal/private/classic"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
```

6.8.3. Central Authentication Service (CAS)

This Single Sign On plugin enables seamless integration between GateIn 3.2 and the CAS Single Sign On Framework. Details about CAS can be found *here* [http://www.jasig.org/cas].

The integration consists of two parts; the first part consists of installing or configuring a CAS server, the second part consists of setting up the portal to use the CAS server.

6.8.3.1. CAS server

First, set up the server to authenticate against the portal login module. In this example, the CAS server is installed on Tomcat.

6.8.3.1.1. Obtaining CAS

CAS can be downloaded from *http://www.jasig.org/cas/download*. Tested version, which should work with these instructions is **CAS 3.3.5**, however other versions can also work without problems.

Extract the downloaded file into a suitable location. This location will be referred to as `$CAS_HOME` in the following instructions.

6.8.3.1.2. Modifying the CAS server

To configure the web archive as desired, the simplest way is to make the necessary changes directly in the CAS codebase.

Note

To complete these instructions, and perform the final build step, you will need the Apache Maven 2. You can get it *here* [http://maven.apache.org/download.html].

First, change the default authentication handler with the one provided by GateIn 3.2.

The CAS Server Plugin makes secure authentication callbacks to a RESTful service installed on the remote GateIn 3.2 server to authenticate a user.

In order for the plugin to function correctly, it needs to be properly configured to connect to this service. This configuration is done via the `cas.war/WEB-INF/deployerConfigContext.xml` file.

1. Open `CAS_HOME/cas-server-webapp/src/main/webapp/WEB-INF/deployerConfigContext.xml`
2. Replace:

```
<!--
  | Whereas CredentialsToPrincipalResolvers identify who it is some Credentials might authenticate,
   | AuthenticationHandlers actually authenticate credentials.  Here e declare the AuthenticationHandlers that
 | authenticate the Principals that the CredentialsToPrincipalResolvers identified.  CAS will try these handlers in turn
  | until it finds one that both supports the Credentials presented and succeeds in authenticating.
 +-->
<property name="authenticationHandlers">
  <list>
    <!--
     | This is the authentication handler that authenticates services by means of callback via SSL, thereby validating
     | a server side SSL certificate.
     +-->
                                                                <bean class="org.jasig.cas.authentication.handler.support.HttpBasedServiceCredentialsAuthenticationHandler"
          p:httpClient-ref="httpClient" />
    <!--
```

```
      | This is the authentication handler declaration that every CAS deployer will need to
change before deploying CAS
       | into production.  The default SimpleTestUsernamePasswordAuthenticationHandler
authenticates UsernamePasswordCredentials
       | where the username equals the password.  You will need to replace this with an
AuthenticationHandler that implements your
     | local authentication strategy.  You might accomplish this by coding a new such handler
and declaring
     | edu.someschool.its.cas.MySpecialHandler here, or you might use one of the handlers
provided in the adaptors modules.
     +-->
    <bean

lass="org.jasig.cas.authentication.handler.support.SimpleTestUsernamePasswordAuthenticationHandler"
>
  </list>
 </property>
```

With the following (Make sure to set the host, port and context with the values corresponding to your portal). Also available in `GATEIN_SSO_HOME/cas/plugin/WEB-INF/deployerConfigContext.xml`.

```
<!--
 | Whereas CredentialsToPrincipalResolvers identify who it is some Credentials might
authenticate,
 |  AuthenticationHandlers actually authenticate credentials.  Here we declare the
AuthenticationHandlers that
| authenticate the Principals that the CredentialsToPrincipalResolvers identified.  CAS will
try these handlers in turn
 | until it finds one that both supports the Credentials presented and succeeds in
authenticating.
+-->
<property name="authenticationHandlers">
  <list>
    <!--
     | This is the authentication handler that authenticates services by means of callback via
SSL, thereby validating
     | a server side SSL certificate.
     +-->
                                                                          <bean
class="org.jasig.cas.authentication.handler.support.HttpBasedServiceCredentialsAuthenticationHandler"
         p:httpClient-ref="httpClient" />
    <!--
```

```
        | This is the authentication handler declaration that every CAS deployer will need to
change before deploying CAS
        | into production.  The default SimpleTestUsernamePasswordAuthenticationHandler
authenticates UsernamePasswordCredentials
        | where the username equals the password.  You will need to replace this with an
AuthenticationHandler that implements your
      | local authentication strategy.  You might accomplish this by coding a new such handler
and declaring
      | edu.someschool.its.cas.MySpecialHandler here, or you might use one of the handlers
provided in the adaptors modules.
     +-->
    <!-- Integrates with the Gatein Authentication Service to perform authentication -->
    <!--
        | Note: Modify the Plugin Configuration based on the actual information of a GateIn
instance.
        | The instance can be anywhere on the internet...Not necessarily on localhost where
CAS is running
     +-->
    <bean class="org.gatein.sso.cas.plugin.AuthenticationPlugin">
      <property name="gateInHost"><value>localhost</value></property>
      <property name="gateInPort"><value>8080</value></property>
      <property name="gateInContext"><value>portal</value></property>
    </bean>
  </list>
</property>
```

3. Copy `GATEIN_SSO_HOME/cas/plugin/WEB-INF/lib/sso-cas-plugin-<VERSION>.jar` and `GATEIN_SSO_HOME/cas/plugin/WEB-INF/lib/commons-httpclient-<VERSION>.jar` into the `CAS_HOME/cas-server-webapp/src/main/webapp/WEB-INF/lib` created directory.

4. Get an installation of Tomcat and extract it into a suitable location (which will be called `TOMCAT_HOME` for these instructions).

   Change the default port to avoid a conflict with the default GateIn 3.2 (for testing purposes). Edit `TOMCAT_HOME/conf/server.xml` and replace the 8080 port to 8888.

   Note

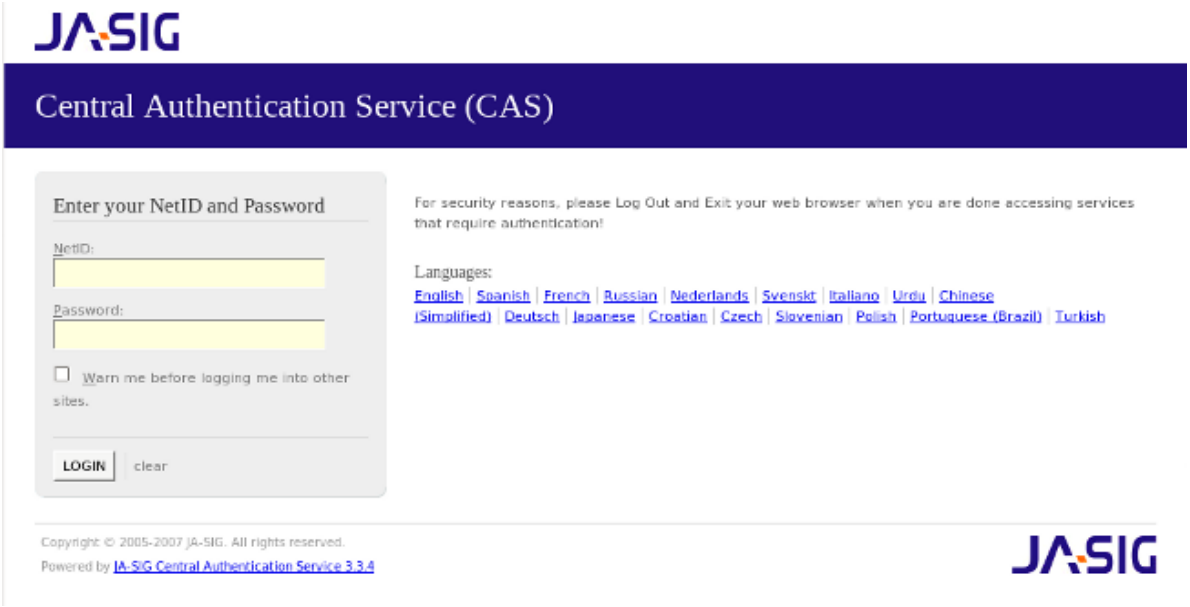
   If GateIn 3.2 is running on the same machine as Tomcat, other ports need to be changed in addition to 8080 to avoid port conflicts. They can be changed to any free port. For example, you can change admin port from 8005 to 8805, and AJP port from 8009 to 8809.

5. Go to `CAS_HOME/cas-server-webapp` and execute the command:

```
mvn install
```

6. Copy `CAS_HOME/cas-server-webapp/target/cas.war` into `TOMCAT_HOME/webapps`.

   Tomcat should start and be accessible at *http://localhost:8888/cas*. Note that at this stage login won't be available.



Note

By default on logout the CAS server will display the CAS logout page with a link to return to the portal. To make the CAS server redirect to the portal page after a logout, modify the `cas.war/WEB-INF/cas-servlet.xml` to include the follow line :

```
<bean id="logoutController" class="org.jasig.cas.web.LogoutController"
      p:centralAuthenticationService-ref="centralAuthenticationService"
      p:logoutView="casLogoutView"
      p:warnCookieGenerator-ref="warnCookieGenerator"
                                  p:ticketGrantingTicketCookieGenerator-
ref="ticketGrantingTicketCookieGenerator"
      p:followServiceRedirects="true"/>
```

6.8.3.2. Setup the CAS client

1. Copy all libraries from `GATEIN_SSO_HOME/cas/gatein.ear/lib` into `JBOSS_HOME/server/default/deploy/gatein.ear/lib` (Or in Tomcat, into `$GATEIN_HOME/lib`)
2. • In JBoss AS, edit `gatein.ear/META-INF/gatein-jboss-beans.xml` and uncomment on this section:

```
<authentication>
  <login-module code="org.gatein.sso.agent.login.SSOLoginModule" flag="required">
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
  </login-module>
        <login-module     code="org.exoplatform.services.security.j2ee.JbossLoginModule"
 flag="required">
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
  </login-module>
</authentication>
```

   • In Tomcat, edit `GATEIN_HOME/conf/jaas.conf`, uncomment on this section and comment other parts:

```
org.gatein.sso.agent.login.SSOLoginModule required;
org.exoplatform.services.security.j2ee.TomcatLoginModule required
portalContainerName=portal
realmName=gatein-domain;
```

3. In Tomcat, edit `GATEIN_HOME/webapps/portal.war/META-INF/context.xml` and add `ServletAccessValve` into configuration as first sub-element of `Context`:

```
<Context path='/portal' docBase='portal' ... >

  <Valve className='org.gatein.sso.agent.tomcat.ServletAccessValve' />

  ...
</Context>
```

4. The installation can be tested at this point:

    1. Start (or restart) GateIn 3.2, and (assuming the CAS server on Tomcat is running) direct your browser to *http://localhost:8888/cas*.
    2. Login with the username `root` and the password `gtn` (or any account created through the portal).

6.8.3.3. Redirect to CAS

To utilize the Central Authentication Service, GateIn 3.2 needs to redirect all user authentication to the CAS server.

Information about where the CAS is hosted must be properly configured within the GateIn 3.2 instance. The required configuration is done by modifying three files:

- In the `gatein.ear/web.war/groovy/groovy/webui/component/UIBannerPortlet.gtml` file modify the 'Sign In' link as follows:

```
<!--
<a class="Login" onclick="$signInAction"><%=_ctx.appRes("UILoginForm.label.Signin")%></
a>
-->
<a class="Login" href="/portal/sso"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
```

- In the `gatein.ear/web.war/groovy/portal/webui/component/UILogoPortlet.gtmpl` file, modify the 'Sign In' link as follows:

```
<!--
<a onclick="$signInAction"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
-->
<a href="/portal/sso"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
```

- Replace the entire contents of `gatein.ear/02portal.war/login/jsp/login.jsp` with:

```
<html>
  <head>
    <script type="text/javascript">
     window.location = '/portal/sso';
    </script>
  </head>
  <body>
  </body>
</html>
```

- Add the following Filters at the top of the filter chain in `gatein.ear/02portal.war/WEB-INF/web.xml`:

```
<filter>
   <filter-name>LoginRedirectFilter</filter-name>
   <filter-class>org.gatein.sso.agent.filter.LoginRedirectFilter</filter-class>
   <init-param>
      <!-- This should point to your SSO authentication server -->
      <param-name>LOGIN_URL</param-name>
      <!-- If casRenewTicket param value of InitiateLoginServlet is: not specified or false -->
                <param-value>http://localhost:8888/cas/login?service=http://localhost:8080/portal/
initiatessologin</param-value>
      <!-- If casRenewTicket param value of InitiateLoginServlet is : true -->
          <!--  <param-value>http://localhost:8888/cas/login?service=http://localhost:8080/portal/
initiatessologin&amp;renew=true</param-value> -->
   </init-param>
</filter>
<filter>
   <filter-name>CASLogoutFilter</filter-name>
   <filter-class>org.gatein.sso.agent.filter.CASLogoutFilter</filter-class>
   <init-param>
      <!-- This should point to your JOSSO authentication server -->
      <param-name>LOGOUT_URL</param-name>
      <param-value>http://localhost:8888/cas/logout</param-value>
   </init-param>
</filter>
<filter>
   <filter-name>InitiateLoginFilter</filter-name>
   <filter-class>org.gatein.sso.agent.filter.InitiateLoginFilter</filter-class>
   <init-param>
      <param-name>ssoServerUrl</param-name>
      <param-value>http://localhost:8888/cas</param-value>
```

```
    </init-param>
    <init-param>
      <param-name>casRenewTicket</param-name>
      <param-value>false</param-value>
    </init-param>
    <init-param>
      <param-name>casServiceUrl</param-name>
      <param-value>http://localhost:8080/portal/initiatessologin</param-value>
    </init-param>
    <init-param>
      <param-name>loginUrl</param-name>
      <param-value>http://localhost:8080/portal/dologin</param-value>
    </init-param>
  </filter>

  <!-- Mapping the filters at the very top of the filter chain -->
  <filter-mapping>
    <filter-name>LoginRedirectFilter</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <filter-mapping>
    <filter-name>CASLogoutFilter</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <filter-mapping>
    <filter-name>InitiateLoginFilter</filter-name>
    <url-pattern>/initiatessologin</url-pattern>
  </filter-mapping>
```

Once these changes have been made, all links to the user authentication pages will redirect to the CAS centralized authentication form.

6.8.4. JOSSO

This Single-Sign-On plugin enables the seamless integration between GateIn 3.2 and the JOSSO Single-Sign-On Framework. Details about JOSSO can be found *here* [http://www.josso.org].

Setting up this integration consists of two steps: installing/configuring a JOSSO server, and setting up the portal to use the JOSSO server.

6.8.4.1. JOSSO server

This section describes how to set up the JOSSO server to authenticate against the GateIn 3.2 login module.

In this example, the JOSSO server will be installed on Tomcat.

6.8.4.1.1. Obtaining JOSSO

JOSSO can be downloaded from *http://sourceforge.net/projects/josso/files/*. Use the package that embeds Apache Tomcat.

Once downloaded, extract the package into what will be called `JOSSO_HOME` in this example.

Warning

The steps described later are only correct in case of JOSSO v.1.8

6.8.4.1.2. Modifying the JOSSO server

1. If you have JOSSO 1.8.1, then copy the files from `GATEIN_SSO_HOME/josso/josso-181/plugin` into the Tomcat directory (`JOSSO_HOME`).

   If you have JOSSO 1.8.2 or newer, then copy the files from `GATEIN_SSO_HOME/josso/josso-182/plugin` into the Tomcat directory (`JOSSO_HOME`).

   This action should replace or add the following files to the `JOSSO_HOME/webapps/josso/WEB-INF/lib` directory:

   - `JOSSO_HOME/lib/josso-gateway-config.xml`
   - `JOSSO_HOME/lib/josso-gateway-gatein-stores.xml`

   and

   - `JOSSO_HOME/webapps/josso/WEB-INF/classes/gatein.properties`

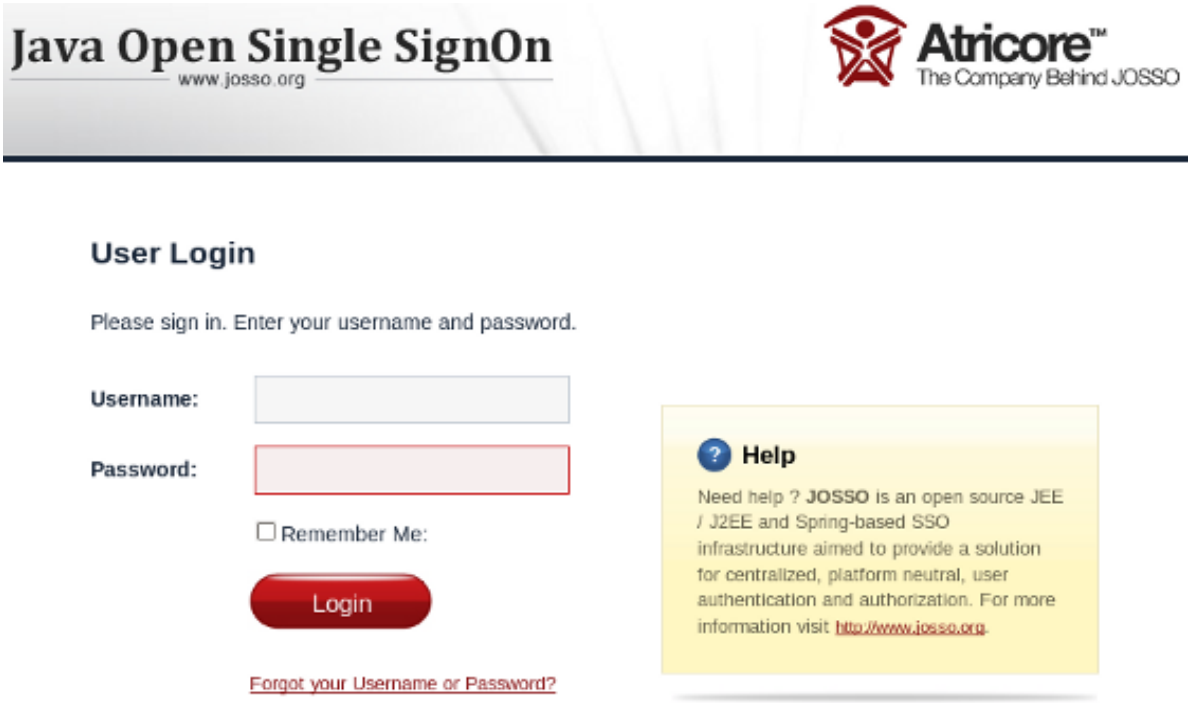
2. Edit `TOMCAT_HOME/conf/server.xml` and replace the 8080 port to 8888 to change the default Tomcat port and avoid a conflict with the default GateIn 3.2 port (for testing purposes).

   Port Conflicts

   If GateIn 3.2 is running on the same machine as Tomcat, other ports need to be changed in addition to 8080 to avoid port conflicts. They can be changed to any free port. For example, you can change the admin port from 8005 to 8805, and AJP port from 8009 to 8809.

3. Tomcat should now start and allow access to *http://localhost:8888/josso/signon/login.do* but at this stage login will not be available.



6.8.4.2. Setup the JOSSO client

Note

There are some changes in JOSSO agent api among versions 1.8.1 and 1.8.2, which means that we need to use different modules for different JOSSO versions. In next section, we will use directory with key **josso-18X**, which will be directory *josso-181* if you have JOSSO 1.8.1 and *josso-182* if you have JOSSO 1.8.2 or newer.

1. Copy the library files from `GATEIN_SSO_HOME/josso/josso-18X/gatein.ear/lib` into `gatein.ear/lib` (or into `GATEIN_HOME/lib` if GateIn 3.2 is running in Tomcat)
2. Copy the file `GATEIN_SSO_HOME/josso/josso-18X/gatein.ear/portal.war/WEB-INF/classes/josso-agent-config.xml` into `gatein.ear/02portal.war/WEB-INF/classes` (or into `GATEIN_HOME/webapps/portal.war/WEB-INF/classes`, or `GATEIN_HOME/conf` if GateIn 3.2 is running in Tomcat)
3. - In JBoss AS, edit `gatein.ear/META-INF/gatein-jboss-beans.xml` and uncomment this section:

```
<authentication>
```

```
  <login-module code="org.gatein.sso.agent.login.SSOLoginModule" flag="required">
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
  </login-module>
        <login-module     code="org.exoplatform.services.security.j2ee.JbossLoginModule"
 flag="required">
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
  </login-module>
</authentication>
```

- In Tomcat, edit `GATEIN_HOME/conf/jaas.conf` and uncomment this section:

```
org.gatein.sso.agent.login.SSOLoginModule required;
org.exoplatform.services.security.j2ee.TomcatLoginModule required
portalContainerName=portal
realmName=gatein-domain;
```

4. In Tomcat, edit `GATEIN_HOME/webapps/portal.war/META-INF/context.xml` and add `ServletAccessValve` into configuration as first sub-element of `Context`:

```
<Context path='/portal' docBase='portal' ... >

  <Valve className='org.gatein.sso.agent.tomcat.ServletAccessValve' />

  ...
</Context>
```

5. The installation can be tested at this point.

    1. Start (or restart) GateIn 3.2, and (assuming the JOSSO server on Tomcat is running) direct your browser to *http://localhost:8888/josso/signon/login.do*.

    2. Login with the username `root` and the password `gtn` or any account created through the portal.

6.8.4.3. Setup the portal to redirect to JOSSO

The next part of the process is to redirect all user authentication to the JOSSO server.

Information about where the JOSSO server is hosted must be properly configured within the GateIn 3.2 instance. The required configuration is done by modifying four files:

- In the `gatein.ear/web.war/groovy/groovy/webui/component/UIBannerPortlet.gtml` file modify the 'Sign In' link as follows:

```
<!--
<a class="Login" onclick="$signInAction"><%=_ctx.appRes("UILoginForm.label.Signin")%></
a>
-->
<a class="Login" href="/portal/sso"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
```

- In the `gatein.ear/web.war/groovy/portal/webui/component/UILogoPortlet.gtmpl` file modify the 'Sign In' link as follows:

```
<!--
<a onclick="$signInAction"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
-->
<a href="/portal/sso"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
```

- Replace the entire contents of `gatein.ear/02portal.war/login/jsp/login.jsp` with:

```
<html>
  <head>
    <script type="text/javascript">
     window.location = '/portal/sso';
    </script>
  </head>
  <body>
  </body>
</html>
```

- Add the following Filters at the top of the filter chain in `gatein.ear/02portal.war/WEB-INF/web.xml`:

```
<filter>
  <filter-name>LoginRedirectFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.LoginRedirectFilter</filter-class>
  <init-param>
    <!-- This should point to your SSO authentication server -->
    <param-name>LOGIN_URL</param-name>
                <param-value>http://localhost:8888/josso/signon/login.do?josso_back_to=http://
localhost:8080/portal/initiatessologin</param-value>
  </init-param>
</filter>
<filter>
  <filter-name>JOSSOLogoutFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.JOSSOLogoutFilter</filter-class>
  <init-param>
    <!-- This should point to your JOSSO authentication server -->
    <param-name>LOGOUT_URL</param-name>
    <param-value>http://localhost:8888/josso/signon/logout.do</param-value>
  </init-param>
</filter>
<filter>
  <filter-name>InitiateLoginFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.InitiateLoginFilter</filter-class>
  <init-param>
    <param-name>ssoServerUrl</param-name>
    <param-value>http://localhost:8888/josso/signon/login.do</param-value>
  </init-param>
  <init-param>
    <param-name>loginUrl</param-name>
    <param-value>http://localhost:8080/portal/dologin</param-value>
  </init-param>
</filter>

<!-- Mapping the filters at the very top of the filter chain -->
<filter-mapping>
  <filter-name>LoginRedirectFilter</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
<filter-mapping>
  <filter-name>JOSSOLogoutFilter</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
```

```
<filter-mapping>
  <filter-name>InitiateLoginFilter</filter-name>
  <url-pattern>/initiatessologin</url-pattern>
</filter-mapping>
```

From now on, all links redirecting to the user authentication pages will redirect to the JOSSO centralized authentication form.

6.8.5. OpenSSO - The Open Web SSO project

Setting up this integration involves two steps. The first step is to install or configure an OpenSSO server, and the second is to set up the portal to use the OpenSSO server.

6.8.5.1. OpenSSO server

This section details the setting up of OpenSSO server to authenticate against the GateIn 3.2 login module.

In this example the OpenSSO server will be installed on Tomcat.

6.8.5.1.1. Obtaining OpenSSO

OpenSSO must be purchased from *Oracle* [http://www.oracle.com/technetwork/middleware/id-mgmt/overview/index.html].

For testing purpose, we will use OpenSSO_80U2 can be downloaded from *Oracle* [http://download.oracle.com/otn/nt/middleware/11g/oracle_opensso_80U2.zip].

Once downloaded, extract the package into a suitable location. This location will be referred to as `OPENSSO_HOME` in this example.

Note

There is also possibility to use OpenAM instead of OpenSSO server. OpenAM is free and integration steps with GateIn 3.2 and OpenAM are very similar as with OpenSSO. More info is *here* [http://community.jboss.org/wiki/GateInAndOpenAMIntegration] .

6.8.5.1.2. Modifying the OpenSSO server

To configure the web server as desired, it is simpler to directly modify the sources.

The first step is to add the GateIn 3.2 Authentication Plugin:

The plugin makes secure authentication callbacks to a RESTful service installed on the remote GateIn 3.2 server to authenticate a user.

In order for the plugin to function correctly, it needs to be properly configured to connect to this service. This configuration is done via the `opensso.war/config/auth/default/AuthenticationPlugin.xml` file.

1. Obtain a copy of Tomcat and extract it into a suitable location (this location will be referred to as `TOMCAT_HOME` in this example).

2. Change the default port to avoid a conflict with the default GateIn 3.2 port (for testing purposes) by editing `TOMCAT_HOME/conf/server.xml` and replacing the 8080 port with 8888.

Note

If GateIn 3.2 is running on the same machine as Tomcat, other ports need to be changed in addition to 8080 to avoid port conflicts. They can be changed to any free port. For example, you can change the admin port from 8005 to 8805, and AJP port from 8009 to 8809.

3. Ensure the `TOMCAT_HOME/webapps/opensso/config/auth/default/AuthenticationPlugin.xml` file looks like this:

```
<?xml version='1.0' encoding="UTF-8"?>

<!DOCTYPE ModuleProperties PUBLIC "=//iPlanet//Authentication Module Properties XML
 Interface 1.0 DTD//EN"
         "jar://com/sun/identity/authentication/Auth_Module_Properties.dtd">

<ModuleProperties moduleName="AuthenticationPlugin" version="1.0" >
  <Callbacks length="2" order="1" timeout="60"
           header="GateIn OpenSSO Login" >
    <NameCallback>
      <Prompt>
        Username
      </Prompt>
    </NameCallback>
    <PasswordCallback echoPassword="false" >
      <Prompt>
        Password
      </Prompt>
    </PasswordCallback>
  </Callbacks>
</ModuleProperties>
```

4. Copy `GATEIN_SSO_HOME/opensso/plugin/WEB-INF/lib/sso-opensso-plugin-<VERSION>.jar`, `GATEIN_SSO_HOME/opensso/plugin/WEB-INF/lib/commons-httpclient-<VERSION>.jar`, and `GATEIN_SSO_HOME/opensso/plugin/WEB-INF/lib/commons-logging-<VERSION>.jar` into the Tomcat directory at `TOMCAT_HOME/webapps/opensso/WEB-INF/lib`.

5. Copy `GATEIN_SSO_HOME/opensso/plugin/WEB-INF/classes/gatein.properties` into `TOMCAT_HOME/webapps/opensso/WEB-INF/classes`

6. Tomcat should start and be able to access *http://localhost:8888/opensso/UI/Login?realm=gatein*. Login will not be available at this point.

Configure "gatein" realm:

1. Direct your browser to *http://localhost:8888/opensso*

2. Create default configuration

3. Login as `amadmin` and then go to tab **Configuration** -> tab **Authentication** -> link **Core** -> add new value and fill in the class name **org.gatein.sso.opensso.plugin.AuthenticationPlugin**. This step is really important. Without it AuthenticationPlugin is not available among other OpenSSO authentication modules.

4. Go to tab **Access control** and create new realm called **gatein**.

5. Go to "gatein" realm and click on **Authentication** tab. At the bottom in the section **Authentication chaining** click on **ldapService**. Here change the selection from "Datastore", which is the default module in the authentication chain, to **AuthenticationPlugin**. This enables authentication of "gatein" realm by using GateIn REST service instead of the OpenSSO LDAP server.

6. Go to **Advanced properties** and change UserProfile from "Required" to **Dynamic**. This step is needed because GateIn 3.2 users are not in OpenSSO Datastore (LDAP server), so their profiles can't be obtained if "Required" is active. By using "Dynamic" all new users are automatically created in OpenSSO datastore after successful authentication.

7. Increase the user privileges to allow REST access. Go to **Access control** -> **Top level realm** -> **Privileges** tab -> **All authenticated users**, and check the last two checkboxes:

   - Read and write access only for policy properties
   - Read and write access to all realm and policy properties

8. Repeat previous step with increasing privileges for **gatein** realm as well.

6.8.5.2. Setup the OpenSSO client

1. Copy all libraries from `GATEIN_SSO_HOME/opensso/gatein.ear/lib` into `JBOSS_HOME/server/default/deploy/gatein.ear/lib` (Or, in Tomcat, into `GATEIN_HOME/lib`)

2. - In JBoss AS, edit `gatein.ear/META-INF/gatein-jboss-beans.xml` and uncomment this section

```
<authentication>
  <login-module code="org.gatein.sso.agent.login.SSOLoginModule" flag="required">
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
  </login-module>
        <login-module     code="org.exoplatform.services.security.j2ee.JbossLoginModule"
 flag="required">
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
  </login-module>
</authentication>
```

   - If you are running GateIn 3.2 in Tomcat, edit `GATEIN_HOME/conf/jaas.conf`, uncomment on this section and comment other parts:

```
org.gatein.sso.agent.login.SSOLoginModule required;
org.exoplatform.services.security.j2ee.TomcatLoginModule required
portalContainerName=portal
realmName=gatein-domain;
```

3. In Tomcat, edit `GATEIN_HOME/webapps/portal.war/META-INF/context.xml` and add `ServletAccessValve` into configuration as first sub-element of `Context`:

```
<Context path='/portal' docBase='portal' ... >

  <Valve className='org.gatein.sso.agent.tomcat.ServletAccessValve' />

  ...
</Context>
```

4. At this point the installation can be tested:

    1. Access GateIn 3.2 by going to *http://localhost:8888/opensso/UI/Login?realm=gatein* (assuming that the OpenSSO server using Tomcat is still running).
    2. Login with the username `root` and the password `gtn` or any account created through the portal.

6.8.5.3. Setup the portal to redirect to OpenSSO

The next part of the process is to redirect all user authentication to the OpenSSO server.

Information about where the OpenSSO server is hosted must be properly configured within the Enterprise Portal Platform instance. The required configuration is done by modifying three files:

- In the `gatein.ear/web.war/groovy/groovy/webui/component/UIBannerPortlet.gtml` file modify the 'Sign In' link as follows:

```
<!--
<a class="Login" onclick="$signInAction"><%=_ctx.appRes("UILoginForm.label.Signin")%></
a>
```

```
-->
<a class="Login" href="/portal/sso"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
```

- In the `gatein.ear/web.war/groovy/portal/webui/component/UILogoPortlet.gtmpl` file modify the 'Sign In' link as follows:

```
<!--
<a onclick="$signInAction"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
-->
<a href="/portal/sso"><%=_ctx.appRes("UILogoPortlet.action.signin")%></a>
```

- Replace the entire contents of `gatein.ear/02portal.war/login/jsp/login.jsp` with:

```
<html>
  <head>
    <script type="text/javascript">
     window.location = '/portal/sso';
    </script>
  </head>
  <body>
  </body>
</html>
```

- Add the following Filters at the top of the filter chain in `gatein.ear/02portal.war/WEB-INF/web.xml`:

```
<filter>
   <filter-name>LoginRedirectFilter</filter-name>
   <filter-class>org.gatein.sso.agent.filter.LoginRedirectFilter</filter-class>
   <init-param>
      <!-- This should point to your SSO authentication server -->
      <param-name>LOGIN_URL</param-name>
            <param-value>http://localhost:8888/opensso/UI/Login?realm=gatein&amp;goto=http://
localhost:8080/portal/initiatessologin</param-value>
   </init-param>
</filter>
<filter>
```

```
    <filter-name>OpenSSOLogoutFilter</filter-name>
    <filter-class>org.gatein.sso.agent.filter.OpenSSOLogoutFilter</filter-class>
    <init-param>
      <!-- This should point to your SSO authentication server -->
      <param-name>LOGOUT_URL</param-name>
      <param-value>http://localhost:8888/opensso/UI/Logout</param-value>
    </init-param>
  </filter>
  <filter>
    <filter-name>InitiateLoginFilter</filter-name>
    <filter-class>org.gatein.sso.agent.filter.InitiateLoginFilter</filter-class>
    <init-param>
      <param-name>ssoServerUrl</param-name>
      <param-value>http://localhost:8888/opensso</param-value>
    </init-param>
    <init-param>
      <param-name>loginUrl</param-name>
      <param-value>http://localhost:8080/portal/dologin</param-value>
    </init-param>
    <init-param>
      <param-name>ssoCookieName</param-name>
      <param-value>iPlanetDirectoryPro</param-value>
    </init-param>
  </filter>

  <!-- Mapping the filters at the very top of the filter chain -->
  <filter-mapping>
    <filter-name>LoginRedirectFilter</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <filter-mapping>
    <filter-name>OpenSSOLogoutFilter</filter-name>
    <url-pattern>/*</url-pattern>
  </filter-mapping>
  <filter-mapping>
    <filter-name>InitiateLoginFilter</filter-name>
    <url-pattern>/initiatessologin</url-pattern>
  </filter-mapping>
```

From now on, all links redirecting to the user authentication pages will redirect to the OpenSSO centralized authentication form.

6.8.5.4. Cross-domain authentication with OpenSSO

Authentication scenario described in previous parts assumes that GateIn 3.2 and OpenSSO are deployed on same server or in same DNS domain (like OpenSSO on **opensso.shareddomain.com** and GateIn 3.2 on **portal.shareddomain.com**).

After successful authentication in OpenSSO console, OpenSSO will add special cookie **iPlanetDirectoryPro** for DNS domain shareddomain.com and then it redirects to portal agent. Portal OpenSSO agent can read SSO token from this cookie because cookie is in same DNS domain, so it can perform validation of token. In other words, exchange of secret token between OpenSSO and GateIn 3.2 is done through this shared cookie.

This approach can't work in situations, when GateIn 3.2 server and OpenSSO server are in different domains and can't share cookie. For this scenario, OpenSSO provides special servlet **CDCServlet**. Authenticated user can send request to this servlet and servlet will send him encoded SAML message with SSO token and other informations. Portal agent is then able to parse and validate this message, obtain SSO token and establish iPlanetDirectoryPro cookie for server where portal is deployed. Once OpenSSO agent on portal side has token, it can perform other validations of this token and successfuly finish authentication of user.

You can follow *this link* [http://docs.oracle.com/cd/E19575-01/820-3746/gipjl/index.html] for more technical informations about CDCServlet or *this link* [http://developers.sun.com/identity/reference/techart/troubleshooting3.html] for more info about whole OpenSSO Cross-Domain workflow with possible troubleshooting tips.

6.8.5.4.1. Cross-domain authentication configuration

1. Let's assume that your OpenSSO server is deployed on opensso.mydomain.com and GateIn 3.2 on portal.yourdomain.com. If you are on single machine, you can simply simulate this scenario by using virtual hosts. On linux you can simply edit **/etc/hosts** file and add those records:

```
opensso.mydomain.com 127.0.0.1
portal.yourdomain.com 127.0.1.1
```

2. Now you can follow steps in previous sections about GateIn 3.2 and OpenSSO integration. Assumption is that OpenSSO will be deployed on Tomcat server on **opensso.mydomain.com:8888** and GateIn 3.2 will be deployed on **portal.yourdomain.com:8080**. Configuration of **LoginRedirectFilter** on GateIn 3.2 side in file **gatein.ear/02portal.war/WEB-INF/web.xml** will be different. We will use different class for filter and different parameters, because now we don't redirect user directly to OpenSSO console but we need to redirect him to CDCServlet. Configuration will look as follows:

```
<filter>
  <filter-name>LoginRedirectFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.OpenSSOCDLoginRedirectFilter</filter-class>
  <init-param>
    <!-- This should point to URL of CDCServlet on your OpenSSO authentication server -->
    <param-name>LOGIN_URL</param-name>
    <param-value>http://opensso.mydomain.com:8888/opensso/cdcservlet</param-value>
  </init-param>
  <init-param>
    <!-- This is name of GateIn authentication realm in your OpenSSO server -->
    <param-name>OpenSSORealm</param-name>
    <param-value>gatein</param-value>
  </init-param>
  <init-param>
    <!-- This is URL of agent on GateIn server side. Normally it should point to location,
         which is mapped to InitiateLoginFilter
    -->
    <param-name>AgentUrl</param-name>
    <param-value>http://portal.yourdomain.com:8080/portal/initiatessologin</param-value>
  </init-param>
</filter>
```

Configuration of OpenSSOLogoutFilter and InitiateLoginFilter will be quite similar like in previous scenario. Only difference are different host names:

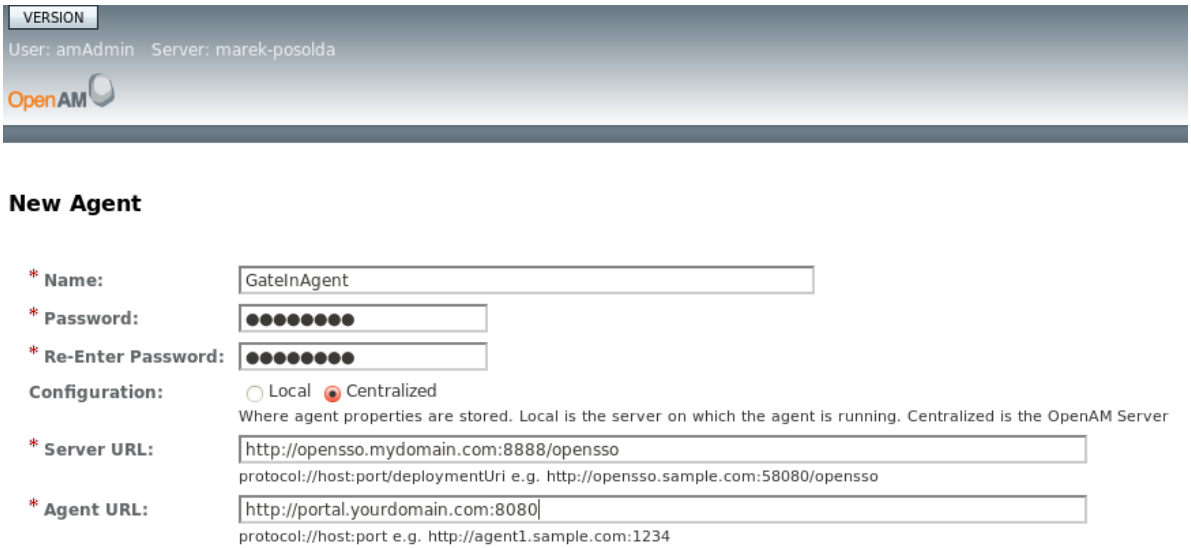
```
<filter>
  <filter-name>OpenSSOLogoutFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.OpenSSOLogoutFilter</filter-class>
  <init-param>
    <!-- This should point to your OpenSSO authentication server -->
    <param-name>LOGOUT_URL</param-name>
    <param-value>http://opensso.mydomain.com:8888/opensso/UI/Logout</param-value>
  </init-param>
</filter>
<filter>
```

```
  <filter-name>InitiateLoginFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.InitiateLoginFilter</filter-class>
  <init-param>
    <param-name>ssoServerUrl</param-name>
    <param-value>http://opensso.mydomain.com:8888/opensso</param-value>
  </init-param>
  <init-param>
    <param-name>loginUrl</param-name>
    <param-value>http://portal.yourdomain.com:8080/portal/dologin</param-value>
  </init-param>
  <init-param>
    <param-name>ssoCookieName</param-name>
    <param-value>iPlanetDirectoryPro</param-value>
  </init-param>
</filter>
```

3. In case that you are on OpenAM instead of OpenSSO, it's mandatory to create agent for GateIn 3.2 server. This agent is required by CDCServlet to work properly. You can create agent in OpenAM UI by performing these steps:

   - Go to *http://opensso.mydomain.com:8888/opensso* and login as *amadmin*
   - Go to **Access Control** --> **Realm "gatein"** --> **Agents** --> **Web**
   - Create new web agent through the wizard. You can use these properties:
     - Name: GateInAgent
     - Password: Whatever you want...
     - Configuration: Centralized
     - Server URL: http://opensso.mydomain.com:8888/opensso
     - Agent URL: http://portal.yourdomain.com:8080

     If you have more portal servers on different hosts, you may want to create agent for each of them. Please look at *OpenAM administration guide* [http://openam.forgerock.org/doc/admin-guide/index.html] for more details.



Note

Support for Cross-Domain scenario has been tested with GateIn 3.2 and with OpenSSO of version 8.0-Update1 and OpenAM of version 9.5.2 as SSO servers.

6.8.6. SPNEGO

SPNEGO (Simple and Protected GSSAPI Negotiation Mechanism) is used to authenticate transparently through the web browser after the user has been authenticated when logging-in his session.

A typical use case is the following:

1. User logs into his desktop (Such as a Windows machine).
2. The desktop login is governed by Active Directory domain.
3. User then uses his browser (IE/Firefox) to access a web application (that uses JBoss Negotiation) hosted on JBoss EPP.
4. The Browser transfers the desktop sign on information to the web application.
5. JBoss EAP/AS uses background GSS messages with the Active Directory (or any Kerberos Server) to validate the Kerberos ticket from user.
6. The User has seamless SSO into the web application.

6.8.6.1. SPNEGO Server Configuration

In this section, we will describe some necessary steps for setup Kerberos server on Linux. This server will then be used for SPNEGO authentication against GateIn 3.2

Note

If you don't have Linux but you are using Windows and Active Directory domain, then these informations are not important for you and you may jump to the *Section 6.8.6.3, "GateIn 3.2 Configuration"* to see how to integrate SPNEGO with GateIn 3.2. Please note that Kerberos setup is also dependent on your Linux distribution and so steps can be slightly different in your environment.

1. Correct the setup of network on the machine. For example, if you are using the "server.local.network" domain as your machine where Kerberos and GateIn 3.2 are located, add the line containing the machine's IP address to the **/etc/hosts** file.

```
192.168.1.88  server.local.network
```

Note

It is not recommended to use loopback addresses.

2. Install Kerberos with these packages: krb5-admin-server, krb5-kdc, krb5-config, krb5-user, krb5-clients, and krb5-rsh-server.
3. Edit the Kerberos configuration file at **/etc/krb5.config**, including:
   - Uncomment on these lines:

```
default_tgs_enctypes = des3-hmac-sha1
default_tkt_enctypes = des3-hmac-sha1
permitted_enctypes = des3-hmac-sha1
```

   - Add **local.network** as a default realm and it is also added to the list of realms and remove the remains of realms. The content looks like:

```
[libdefaults]
    default_realm = LOCAL.NETWORK
```

```
# The following krb5.conf variables are only for MIT Kerberos.
    krb4_config = /etc/krb.conf
    krb4_realms = /etc/krb.realms
    kdc_timesync = 1
    ccache_type = 4
    forwardable = true
    proxiable = true

# The following encryption type specification will be used by MIT Kerberos
# if uncommented.  In general, the defaults in the MIT Kerberos code are
# correct and overriding these specifications only serves to disable new
# encryption types as they are added, creating interoperability problems.
#
# Thie only time when you might need to uncomment these lines and change
# the enctypes is if you have local software that will break on ticket
# caches containing ticket encryption types it doesn't know about (such as
# old versions of Sun Java).

    default_tgs_enctypes = des3-hmac-sha1
    default_tkt_enctypes = des3-hmac-sha1
    permitted_enctypes = des3-hmac-sha1

# The following libdefaults parameters are only for Heimdal Kerberos.
    v4_instance_resolve = false
    v4_name_convert = {
        host = {
            rcmd = host
            ftp = ftp
        }
        plain = {
            something = something-else
        }
    }
    fcc-mit-ticketflags = true

[realms]
    LOCAL.NETWORK = {
        kdc = server.local.network
        admin_server = server.local.network
    }

[domain_realm]
    .local.network = LOCAL.NETWORK
    local.network = LOCAL.NETWORK
```

```
[login]
    krb4_convert = true
    krb4_get_tickets = false
```

4. Edit the KDC configuraton file at **/etc/krb5kdc/kdc.conf** that looks like.

```
[kdcdefaults]
    kdc_ports = 750,88

[realms]
    LOCAL.NETWORK = {
        database_name = /home/gatein/krb5kdc/principal
        admin_keytab = FILE:/home/gatein/krb5kdc/kadm5.keytab
        acl_file = /home/gatein/krb5kdc/kadm5.acl
        key_stash_file = /home/gatein/krb5kdc/stash
        kdc_ports = 750,88
        max_life = 10h 0m 0s
        max_renewable_life = 7d 0h 0m 0s
        master_key_type = des3-hmac-sha1
      supported_enctypes = aes256-cts:normal arcfour-hmac:normal des3-hmac-sha1:normal
 des-cbc-crc:normal des:normal des:v4 des:norealm des:onlyrealm des:afs3
        default_principal_flags = +preauth
    }

[logging]
        kdc = FILE:/home/gatein/krb5logs/kdc.log
        admin_server = FILE:/home/gatein/krb5logs/kadmin.log
```

- Create krb5kdc and krb5logs directory for Kerberos database as shown in the configuration file above.
- Next, create a KDC database using the following command.

```
sudo krb5_newrealm
```

- Start the KDC and Kerberos admin servers using these commands:

```
```

```
sudo /etc/init.d/krb5-kdc restart
sudo /etc/init.d/krb-admin-server restart
```

5. Add Principals and create Keys.

   - Start an interactive 'kadmin' session and create the necessary Principals.

   ```
   sudo kadmin.local
   ```

   - Add the GateIn 3.2 machine and keytab file that need to be authenticated.

   ```
   addprinc -randkey HTTP/server.local.network@LOCAL.NETWORK
   ktadd HTTP/server.local.network@LOCAL.NETWORK
   ```

   - Add the default GateIn 3.2 user accounts and enter the password for each created user that will be authenticated.

   ```
   addprinc john
   addprinc demo
   addprinc root
   ```

6. Test your changed setup by using the command.

   ```
   kinit -A demo
   ```

   - If the setup works well, you are required to enter the password created for this user in Step 5. Without the -A, the kerberos ticket validation involved reverse DNS lookups, which can get very cumbersome to debug if your network's DNS setup is not great. This is a production level security feature, which is not necessary in this development setup. In production environment, it will be better to avoid -A option.

   - After successful login to Kerberos, you can see your Kerberos ticket when using this command.

```
klist
```

- If you want to logout and destroy your ticket, use this command.

```
kdestroy
```

6.8.6.2. Clients

After performing all configurations above, you need to enable the **Negotiate authentication** of Firefox in client machines so that clients could be authenticated by GateIn 3.2 as follows:

1. Start Firefox, then enter the command: **about:config** into the address field.
2. Enter **network.negotiate-auth** and set the value as below:

```
network.negotiate-auth.allow-proxies = true
network.negotiate-auth.delegation-uris = .local.network
network.negotiate-auth.gsslib (no-value)
network.negotiate-auth.trusted-uris = .local.network
network.negotiate-auth.using-native-gsslib = true
```

Note

Consult documentation of your OS or web browser if using different browser than Firefox.

6.8.6.3. GateIn 3.2 Configuration

GateIn 3.2 uses JBoss Negotiation to enable SPNEGO-based desktop SSO for the portal. Here are the steps to integrate SPNEGO with GateIn 3.2.

1. Activate the Host authentication under the **JBOSS_HOME/server/default/conf/login-config.xml** file by adding the following host login module:

```
<!-- SPNEGO domain -->
```

```
<application-policy name="host">
 <authentication>
  <login-module code="com.sun.security.auth.module.Krb5LoginModule" flag="required">
   <module-option name="storeKey">true</module-option>
   <module-option name="useKeyTab">true</module-option>
     <module-option name="principal">HTTP/server.local.network@LOCAL.NETWORK</
module-option>
   <module-option name="keyTab">/etc/krb5.keytab</module-option>
   <module-option name="doNotPrompt">true</module-option>
   <module-option name="debug">true</module-option>
  </login-module>
 </authentication>
</application-policy>
```

The 'keyTab' value should point to the keytab file that was generated by the kadmin kerberos tool. When using Kerberos on Linux, it should be value of parameter **admin_keytab** from kdc.conf file. See the *Section 6.8.6.1, "SPNEGO Server Configuration"* section for more details.

2. Extend the core authentication mechanisms to support SPNEGO under **JBOSS_HOME/server/default/deployers/jbossweb.deployer/META-INF/war-deployers-jboss-beans.xml** by adding the 'SPNEGO' authenticators property.

```
<deployment xmlns="urn:jboss:bean-deployer:2.0">
<property name="authenticators">
                <map class="java.util.Properties" keyClass="java.lang.String"
 valueClass="java.lang.String">
   <entry>
     <key>BASIC</key>
     <value>org.apache.catalina.authenticator.BasicAuthenticator</value>
   </entry>
   <entry>
     <key>CLIENT-CERT</key>
     <value>org.apache.catalina.authenticator.SSLAuthenticator</value>
   </entry>
   <entry>
    <key>DIGEST</key>
    <value>org.apache.catalina.authenticator.DigestAuthenticator</value>
   </entry>
   <entry>
     <key>FORM</key>
     <value>org.apache.catalina.authenticator.FormAuthenticator</value>
```

```
    </entry>
    <entry>
      <key>NONE</key>
      <value>org.apache.catalina.authenticator.NonLoginAuthenticator</value>
    </entry>

    <!-- Add this entry -->
    <entry>
      <key>SPNEGO</key>
      <value>org.gatein.sso.spnego.GateInNegotiationAuthenticator</value>
    </entry>
  </map>
</property>
```

3. Add the GateIn SSO module binaries by copying **GATEIN_SSO_HOME/spnego/gatein.ear/lib/sso-agent-VERSION.jar** to the **JBOSS_HOME/server/default/deploy/gatein.ear/lib** directory. File **GATEIN_SSO_HOME/spnego/gatein.ear/lib/spnego-VERSION.jar** needs to be copied to the **JBOSS_HOME/server/default/lib** directory.

4. Download library `jboss-negotiation-2.0.4.GA` from location *https://repository.jboss.org/nexus/content/groups/public/org/jboss/security/jboss-negotiation/2.0.4.GA/jboss-negotiation-2.0.4.GA.jar* and copy this file to `JBOSS_HOME/server/default/lib` directory as well.

5. Modify the **JBOSS_HOME/server/defaut/deploy/gatein.ear/META-INF/gatein-jboss-beans.xml** file as below:

```
<deployment xmlns="urn:jboss:bean-deployer:2.0">

      <application-policy xmlns="urn:jboss:security-beans:1.0" name="gatein-form-auth-domain">
   <authentication>
     <login-module code="org.gatein.wci.security.WCILoginModule" flag="optional">
       <module-option name="portalContainerName">portal</module-option>
       <module-option name="realmName">gatein-domain</module-option>
     </login-module>
      <login-module code="org.exoplatform.services.security.jaas.SharedStateLoginModule" flag="required">
       <module-option name="portalContainerName">portal</module-option>
       <module-option name="realmName">gatein-domain</module-option>
     </login-module>
```

```
      <!-- Uncomment this part to check on each login if user is member of "/platform/users"
group and if not
         create such membership -->
    <!--
                                                                    <login-module

flag="required">
      <module-option name="portalContainerName">portal</module-option>
      <module-option name="realmName">gatein-domain</module-option>
      <module-option name="membershipType">member</module-option>
      <module-option name="groupId">/platform/users</module-option>
    </login-module>
    -->

            <login-module   code="org.exoplatform.services.security.j2ee.JbossLoginModule"
flag="required">
      <module-option name="portalContainerName">portal</module-option>
<!-- logout needs to be performed from 'gatein-domain' as it is used for JaasSecurityManager.
-->
      <module-option name="realmName">gatein-domain</module-option>
    </login-module>
  </authentication>
 </application-policy>


 <application-policy xmlns="urn:jboss:security-beans:1.0" name="gatein-domain">
  <authentication>
   <login-module
      code="org.gatein.sso.spnego.SPNEGOLoginModule"
      flag="requisite">
      <module-option name="password-stacking">useFirstPass</module-option>
      <module-option name="serverSecurityDomain">host</module-option>
 <module-option name="removeRealmFromPrincipal">true</module-option>
  <module-option  name="usernamePasswordDomain">gatein-form-auth-domain</module-
option>
    </login-module>
    <login-module
      code="org.gatein.sso.agent.login.SPNEGORolesModule"
      flag="required">
    <module-option name="password-stacking">useFirstPass</module-option>
    <module-option name="portalContainerName">portal</module-option>
    <module-option name="realmName">gatein-domain</module-option>
    </login-module>
  </authentication>
```

```
  </application-policy>

</deployment>
```

This activates SPNEGO LoginModules with fallback to FORM authentication. When SPNEGO is not available and it needs to fallback to FORM, it will use **gatein-form-auth-domain** security domain. More details below.

6. Modify **JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/web.xml** as below.

```
<!-- <login-config>
   <auth-method>FORM</auth-method>
   <realm-name>gatein-domain</realm-name>
  <form-login-config>
    <form-login-page>/initiatelogin</form-login-page>
   <form-error-page>/errorlogin</form-error-page>
   </form-login-config>
 </login-config>
-->
    <login-config>
      <auth-method>SPNEGO</auth-method>
      <realm-name>SPNEGO</realm-name>
      <form-login-config>
      <form-login-page>/initiatelogin</form-login-page>
      <form-error-page>/errorlogin</form-error-page>
     </form-login-config>
    </login-config>
```

This integrates SPNEGO support into the Portal web archive by switching the authentication mechanism from the default "FORM"-based to "SPNEGO"-based authentication. You can notice that SPNEGO part also contains element **form-login-config**, which is needed if you want to enable fallback to FORM based authentication. In this case, portal will try to authenticate user with his Kerberos ticket through SPNEGO. If user don't have Kerberos ticket, he will be redirected to FORM (GateIn 3.2 login screen). So first attempt is for login with SPNEGO and next attempt is for login with FORM, which is used only if login through SPNEGO is not successful (For example user don't have valid Kerberos ticket or his browser doesn't support SPNEGO with our Kerberos server).

If you don't want fallback to FORM, you can disable form-login-config part and have only:

```
    <login-config>
      <auth-method>SPNEGO</auth-method>
      <realm-name>SPNEGO</realm-name>
<!--      <form-login-config>
      <form-login-page>/initiatelogin</form-login-page>
      <form-error-page>/errorlogin</form-error-page>
     </form-login-config>
-->
    </login-config>
```

In this case user needs to authenticate through SPNEGO and if that fails, FORM is not shown but user has authentication error with HTTP code 401.

7. Integrate the request pre-processing needed for SPNEGO via filters by adding the following filters to the **JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/web.xml** at the top of the Filter chain.

```
<filter>
  <filter-name>LoginRedirectFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.LoginRedirectFilter</filter-class>
  <init-param>
    <!-- This should point to your SSO authentication server -->
    <param-name>LOGIN_URL</param-name>
    <param-value>/portal/private/classic</param-value>
  </init-param>
</filter>

<filter>
 <filter-name>SPNEGOFilter</filter-name>
 <filter-class>org.gatein.sso.agent.filter.SPNEGOFilter</filter-class>
</filter>

<filter-mapping>
  <filter-name>LoginRedirectFilter</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>

<filter-mapping>
  <filter-name>SPNEGOFilter</filter-name>
```

```
  <url-pattern>/login</url-pattern>
</filter-mapping>
```

8. In `JBOSS_HOME/server/default/deploy/gatein.ear/web.war/groovy/groovy/webui/component/UIBannerPortlet.gtml` file modify the 'Sign In' link as follows:

```
<!--
<a class="Login" onclick="$signInAction"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
-->
<a class="Login" href="/portal/sso"><%=_ctx.appRes("UILoginForm.label.Signin")%></a>
```

9. Start the GateIn 3.2 portal using the command below.

```
sudo ./run.sh -Djava.security.krb5.realm=LOCAL.NETWORK -Djava.security.krb5.kdc=server.local.network -c default -b server.local.network
```

10. Login to Kerberos with the command.

```
kinit -A demo
```

    You should be able to click the 'Sign In' link on the GateIn 3.2 portal and the 'demo' user from the GateIn 3.2 portal should be automatically logged in.

11. Let's try to destroy kerberos ticket with command

```
kdestroy
```

    Then try to login again. You will now be placed to login screen of GateIn 3.2 because you don't have active Kerberos ticket. You can login with predefined account and password "demo"/"gtn" .

6.8.7. SAML2

SAML (Security Assertion Markup Language) is Oasis standard for exchanging authentication and authorization data between security domains. SAML 2.0 is an XML-based protocol that uses

security tokens containing assertions to pass information about a principal (usually an end user) between an identity provider and a web service. SAML 2.0 enables web-based authentication and authorization scenarios including single sign-on (SSO).

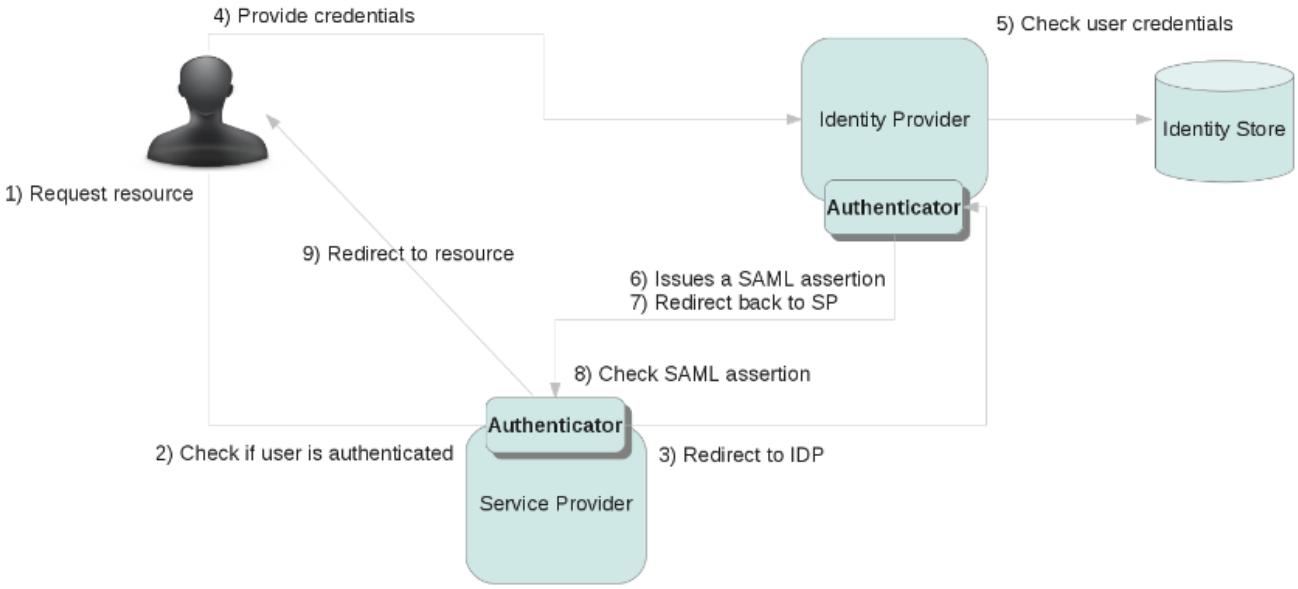
SAML2 standard is described in set of specifications, which provides exact format of XML messages and context how these messages are exchanged between Identity Provider (IDP, Web application, which acts as SSO provider and users are authenticated against it) and Service Provider (SP, Web application, which is used by client who wants to authenticate). More info about specifications in document *http://docs.oasis-open.org/security/saml/v2.0/* .

SAML2 based authentication is provided in GateIn 3.2 SSO component. We support scenarios with GateIn 3.2 acting as Service Provider (SP) or Identity Provider (IDP).

6.8.7.1. SAML2 Overview and authentication workflow

For GateIn 3.2 and SAML2 integration, we are using JBoss project *Picketlink Federation* [https://docs.jboss.org/author/display/PLINK/SAML+v2.0], which provides solution for most important parts of SAML2 specification. Especially it supports SSO authentication with SAML2 HTTP Redirect Binding and SAML2 HTTP Post Binding and it supports SAML2 Global Logout feature.

SSO authentication is based on circle of trust between SP and IDP.



Authentication works as follows (flow with GateIn 3.2 as SAML2 SP):

1. User sends request to secured resource like *http://localhost:8080/portal/dologin*
2. GateIn 3.2 will check if user is already authenticated and if yes, grant access to resource. Otherwise continue with flow below.
3. There is special Tomcat valve, which needs to be configured for portal context. This Valve will create SAML Request, which is basically XML message. Example of message:

```
<samlp:AuthnRequest AssertionConsumerServiceURL="http://localhost:8080/portal/
dologin" ID="ID_101dcb5e-f432-4f45-87cb-47daff92edef"

 ProtocolBinding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST" Version="2.0">
   <saml:Issuer>http://localhost:8080/portal/dologin</saml:Issuer>
   <samlp:NameIDPolicy AllowCreate="true" Format="urn:oasis:names:tc:SAML:2.0:nameid-
format:transient"/>
</samlp:AuthnRequest>
```

Valve will encapsulate SAML request into HttpResponse and it redirects it to IDP. Picketlink Federation supports SAML Redirect Binding, which basically means that SAML XML Request message is Base64 encoded and URL encoded and it is appended as URL parameter to GET request, which will be send to IDP. PL Fed also supports SAML POST Binding where is message encoded into Base64 and sent in the body of POST request.

4. IDP parses XML with SAML request and it sends login screen back to client. Now client (user) needs to authenticate himself. SAML specification does not mandate how exactly should be authentication of client on IDP side performed.

5. User fills his credentials into IDP FORM and submits request for JAAS authentication. GateIn 3.2 SSO component provides login module `SAML2IdpLoginModule`, which will authenticate user by sending callback request via REST API back to GateIn 3.2. This is similar approach like authentication with other SSO providers like CAS, which are also leveraging this REST service.

Note

Portal administrators are free to use their own login module stack instead of our REST callback based login module. However they need to make sure that authenticated users also need to exist in GateIn 3.2 database. Otherwise their users may have authorization errors with 403 response when they try to access portal.

6. So after successful authentication will IDP create SAML assertion ticket and it creates SAML Response message with this ticket. Message can looks like this:

```
<samlp:Response ID="ID_5291c49e-5450-4b3b-9f99-f76606db9929" Version="2.0"
  IssueInstant="2012-04-12T17:53:59.237+01:00" Destination="http://localhost:8080/portal/
dologin" InResponseTo="ID_101dcb5e-f432-4f45-87cb-47daff92edef">
  <saml:Issuer>http://localhost:8080/idp/</saml:Issuer>
  <samlp:Status>
    <samlp:StatusCode Value="urn:oasis:names:tc:SAML:2.0:status:Success"/>
  </samlp:Status>

      <saml:Assertion ID="ID_ebe89398-1e27-4257-9413-c3c17c40c9df" Version="2.0"
 IssueInstant="2012-04-12T17:53:59.236+01:00">
      <saml:Issuer Format="urn:oasis:names:tc:SAML:2.0:nameid-format:persistent">root</
saml:Issuer>
    <saml:Subject>
                          <saml:NameID Format="urn:oasis:names:tc:SAML:2.0:nameid-
format:persistent">root</saml:NameID>
      <saml:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:bearer">
                          <saml:SubjectConfirmationData InResponseTo="ID_101dcb5e-
f432-4f45-87cb-47daff92edef" NotBefore="2012-04-12T17:53:59.236+01:00"
  NotOnOrAfter="2012-04-12T17:54:06.236+01:00" Recipient="http://localhost:8080/portal/
dologin"/>
      </saml:SubjectConfirmation>
    </saml:Subject>
                        <saml:Conditions NotBefore="2012-04-12T17:53:57.236+01:00"
 NotOnOrAfter="2012-04-12T17:54:06.236+01:00"/>
    <saml:AuthnStatement AuthnInstant="2012-04-12T17:53:59.237+01:00">
      <saml:AuthnContext>
        <saml:AuthnContextClassRef>urn:oasis:names:tc:SAML:2.0:ac:classes:Password</
saml:AuthnContextClassRef>
      </saml:AuthnContext>
    </saml:AuthnStatement>
    <saml:AttributeStatement>
      <saml:Attribute Name="Role">
        <saml:AttributeValue xsi:type="xs:string">users</saml:AttributeValue>
      </saml:Attribute>
      <saml:Attribute Name="Role">
        <saml:AttributeValue xsi:type="xs:string">administrators</saml:AttributeValue>
      </saml:Attribute>
    </saml:AttributeStatement>
  </saml:Assertion>
</samlp:Response>
```

7. Message is then encapsulated into HttpResponse and redirected back to SP (GateIn 3.2).

8. On GateIn 3.2 side is SAML response message decoded again by the Tomcat Valve and if assertion from response is valid, then username and his roles are added into ThreadLocal context variable. Valve then triggers JAAS authentication. GateIn 3.2 SSO component will provide login module `SAML2IntegrationLoginModule`, which will parse authenticated username and it will perform GateIn 3.2 specific operations, like creating Identity object and registering it into IdentityRegistry. Now user is successfully authenticated.

9. User is redirected back to secure resource *http://localhost:8080/portal/dologin* , which in next turn will redirect him to GateIn 3.2 as authenticated user.

If user wants to authenticate against different SP application within same browser session (GateIn 3.2 on different host or completely different web application), then he does not need to provide credentials again on IDP side because he has been already authenticated against IDP. So he has automatic authentication thanks to SSO.

In next sections, we will go through various scenarios, which describes how you can leverage SAML2 in GateIn 3.2 and there is description of all needed configuration changes.

6.8.7.2. Single host scenario

This scenario is good starting point for other use cases. GateIn 3.2 will act as SAML2 SP. We will have GateIn 3.2 and SAML2 IDP on same host and we will use JBoss 5 as target server. So assumption is that you have GateIn 3.2 bundle for JBoss 5. Directory with GateIn 3.2 will be referred to as **JBOSS_HOME**. Directory with unpacked SSO packaging zip will be referred to as **GATEIN_SSO_HOME** similarly like in previous sections.

1. Download **idp-sig** application. It's sample quickstart application for Picketlink Federation and it's preconfigured to act as SAML2 IDP, which uses signed SAML messages. It can be downloaded from *https://repository.jboss.org/nexus/index.html#nexus-search;quick~picketlink-quickstarts* . You will need version for JBoss AS5.

2. Deploy downloaded `idp-sig-VERSION.war` into directory `JBOSS_HOME/server/default/deploy/` .

3. Copy all JAR files from `GATEIN_SSO_HOME/saml/gatein.ear/lib/*` into `JBOSS_HOME/server/default/deploy/gatein.ear/lib/`

4. Copy main configuration file for Picketlink Federation from location `GATEIN_SSO_HOME/saml/gatein.ear/02portal.war/WEB-INF/picketlink.xml` to location `JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/`

5. Copy example keystore file for picketlink federation from `GATEIN_SSO_HOME/saml/gatein.ear/02portal.war/WEB-INF/classes/jbid_test_keystore.jks` to `JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/classes/` . This is example keystore file, which uses same keys on both GateIn 3.2 and IDP side. Since it's prebundled keystore, it should not be used for production environment (more details in *Section 6.8.7.3, “Using your own keystores”*).

6. Copy file `gatein-jboss-beans` from `GATEIN_SSO_HOME/saml/gatein.ear/META-INF/gatein-jboss-beans.xml` to `JBOSS_HOME/server/default/deploy/gatein.ear/META-INF/gatein-jboss-beans.xml` . This will replace original file with new configuration, which contains JAAS login modules needed for SAML integration. There are 2 login modules by default: **SAML2IntegrationLoginModule** and **JbossLoginModule**.

7. Add and configure new Valve in `JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/context.xml` . Configuration of new valve should be like this:

```
<Valve
className="org.picketlink.identity.federation.bindings.tomcat.sp.ServiceProviderAuthenticator"
>
```

8. Add new filter and filter-mapping for this filter into `JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/web.xml` .

   Filter configuration should look like this:

```
<filter>
  <filter-name>SAML2LogoutFilter</filter-name>
  <filter-class>org.gatein.sso.agent.filter.SAML2LogoutFilter</filter-class>
</filter>
```

   And filter-mapping for this filter as first filter in filter-mapping section:

```
<filter-mapping>
  <filter-name>SAML2LogoutFilter</filter-name>
  <url-pattern>/*</url-pattern>
</filter-mapping>
```

Note

Filter is needed for "Single Logout" (Global logout) feature of SAML2 specification. Actually it means that when you are logged in more SP applications, you will be logged out automatically from all of them by initiating global logout. You can skip this filter if you don't want global logout and you want to be logged out only from GateIn 3.2 when pressing *Sign out*.

9. In file `JBOSS_HOME/server/default/conf/login-config.xml` you need to add one new application-policy. It is needed by IDP authentication, so that IDP won't use UsersPasswordLoginModule, but it will use login module for REST callback to GateIn 3.2. It means that you will be able to login in SAML IDP screen with same username and passwords as to GateIn 3.2 (root/gtn, john/gtn etc.). New policy needs to look like this:

```
<application-policy xmlns="urn:jboss:security-beans:1.0" name="idp">
  <authentication>
                    <login-module    code="org.gatein.sso.saml.plugin.SAML2IdpLoginModule"
 flag="required">
       <module-option name="rolesProcessing">STATIC</module-option>
       <module-option name="staticRolesList">manager,employee,sales</module-option>
      <module-option name="gateInURL">${portal.callback.url:http://localhost:8080/portal}</
module-option>
    </login-module>
  </authentication>
</application-policy>
```

10. Copy file `GATEIN_SSO_HOME/saml/idp-lib/sso-saml-plugin-VERSION.jar` into file `JBOSS_HOME/server/default/lib/` . This JAR file is needed by IDP for supporting REST callbacks described in previous step.

11. In the `JBOSS_HOME/server/default/deploy/gatein.ear/web.war/groovy/groovy/webui/component/UIBannerPortlet.gtml` file modify the 'Sign In' link as follows:

```
<!--
<a                              class="Login"                              onclick="$signInAction"><
%=_ctx.appRes("UILoginForm.label.Signin")%></a>
-->
```

```
<a class="Login" href="/portal/dologin"><%=_ctx.appRes("UILoginForm.label.Signin")%></
a>
```

12. Test it. You can restart server and go to *http://localhost:8080/portal* and click to "Sign in". You will be redirected to IDP console where you can fill standard GateIn 3.2 username/password for authentication (like john/gtn for instance). After correct login, you will be redirected to GateIn 3.2 as logged user.

6.8.7.3. Using your own keystores

In this procedure, you will generate and use your own Keystores. This will add more safety into trusted communication between GateIn 3.2 and IDP because default packaging is using prepackaged keystore "jbid_test_keystore.jks". For secure and trusted communication, you will need your own keystores with your own keys. Default keystore is useful only for testing purpose, but should not be used in production. We will use separate keys for GateIn 3.2 and for IDP in this scenario.

Note

Scenario below can be simplified by using single keystore file for both GateIn 3.2 and IDP. It depends on your needs if you use same keystore for both or separate keystores for each.

1. Create new keystore for IDP and generate new pair of public/private keys. In directory `JBOSS_HOME/server/default/deploy/idp-sig.war/WEB-INF/classes` (Assumption is exploded WAR archive idp-sig.war) you can do it with command like:

```
keytool -genkey -alias idp-key -keyalg RSA -keystore idp-keystore.jks
```

   You need to choose keystore password and private key password. Let's assume that your keystore password is "keystorepass" a private key password is "keypass" .

2. Export IDP cerificate and public key into file `idp.crt`

```
keytool -export -alias idp-key -file idp.crt -keystore idp-keystore.jks
```

3. Create new keystore for GateIn 3.2 (SP) and generate new pair of public/private keys. In directory `JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/classes`, you can use command like:

```
keytool -genkey -alias sp-key -keyalg RSA -keystore sp-keystore.jks
```

You need to choose keystore password and private key password. Let's assume that your keystore password is "spkeystorepass" a private key password is "spkeypass".

4. Export GateIn 3.2 cerificate and public key into file sp.crt

```
keytool -export -alias sp-key -file sp.crt -keystore sp-keystore.jks
```

5. Import IDP certificate and public key to SP keystore. This will ensure that SP will trust public key from IDP. You can use commands:

```
mv $JBOSS_HOME/server/default/deploy/idp-sig.war/WEB-INF/classes/idp.crt
 $JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/classes/idp.crt
keytool -printcert -v -file idp.crt # Command only for debugging purposes. You can check
 certificate with it.
keytool -import -trustcacerts -alias idp-cert -file idp.crt -keystore sp-keystore.jks
rm idp.crt
```

6. Import GateIn 3.2 certificate and public key to IDP keystore. This will ensure that IDP will trust public key from SP. In directory `JBOSS_HOME/server/default/deploy/idp-sig.war/WEB-INF/classes/` , you can use commands:

```
mv $JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/classes/sp.crt
 $JBOSS_HOME/server/default/deploy/idp-sig.war/WEB-INF/classes/sp.crt
keytool -printcert -v -file sp.crt # Command only for debugging purposes. You can check
 certificate with it.
keytool -import -trustcacerts -alias sp-cert -file sp.crt -keystore idp-keystore.jks
rm sp.crt
```

7. Configuration of KeyProvider in file `JBOSS_HOME/server/default/deploy/idp-sig.war/WEB-INF/picketlink.xml` can look like this:

```
<KeyProvider
 ClassName="org.picketlink.identity.federation.core.impl.KeyStoreKeyManager">
   <Auth Key="KeyStoreURL" Value="/idp-keystore.jks" />
   <Auth Key="KeyStorePass" Value="keystorepass" />
   <Auth Key="SigningKeyPass" Value="keypass" />
   <Auth Key="SigningKeyAlias" Value="idp-key" />
   <ValidatingAlias Key="${portal.sp.host::localhost}" Value="sp-cert"/>
</KeyProvider>
```

8. Configuration of KeyProvider in file `JBOSS_HOME/server/default/deploy/gatein.ear/02portal.war/WEB-INF/picketlink.xml` can look like this:

```
<KeyProvider
 ClassName="org.picketlink.identity.federation.core.impl.KeyStoreKeyManager">
   <Auth Key="KeyStoreURL" Value="/sp-keystore.jks" />
   <Auth Key="KeyStorePass" Value="spkeystorepass" />
   <Auth Key="SigningKeyPass" Value="spkeypass" />
   <Auth Key="SigningKeyAlias" Value="sp-key" />
   <ValidatingAlias Key="${idp.host::localhost}" Value="idp-cert"/>
</KeyProvider>
```

Note

It may be slightly better to use certificates signed by certification authority. But for our purpose it's fine to use self-signed certificates. For more info, you can check additional sources like *http://docs.oracle.com/javase/tutorial/security/sigcert/index.html* .

6.8.7.4. Multiple hosts scenario

In this section, we will show the scenario closed to production environment. We will have 2 hosts with GateIn 3.2, first on host `www.node1.com` and second on `www.node2.com`. Both will use same Identity provider from host `www.node3.com`. So 3 hosts in total.

1. You will need to add virtual hosts to file `/etc/hosts` if you want to test this scenario on single physical machine. On linux, it can be done by adding those entries:

```
127.0.1.1 www.node1.com
127.0.1.2 www.node2.com
127.0.1.3 www.node3.com
```

2. Copy `JBOSS_HOME/server/default` into more separate configurations:

```
cd $JBOSS_HOME/server
cp -r default node1
cp -r default node2
cp -r default node3
```

3. In file `JBOSS_HOME/server/node3/deploy/idp-sig.war/WEB-INF/picketlink.xml` you will need to change trusted domains list to ensure that IDP will trust your domains.

```
<Trust>
  <Domains>node1.com,node2.com,node3.com</Domains>
</Trust>
```

   IDP will also serves requests from both `www.node1.com` and `www.node2.com`. So in KeyProvider configuration, you need to have two "ValidatingAlias" instead of default one. They should look like:

```
<ValidatingAlias Key="www.node1.com" Value="sp-cert"/>
<ValidatingAlias Key="www.node2.com" Value="sp-cert"/>
```

4. Start node1 with command:

```
./run.sh -c node1 -b www.node1.com
-Didp-sig.url=http://www.node3.com:8080/idp-sig/
-Didp.url=http://www.node3.com:8080/idp-sig/
-Dportal.sp.url=http://www.node1.com:8080/portal/dologin
-Didp.host=www.node3.com
 -Dportal.sp.host=www.node1.com
```

   This will start the portal and set all the system properties, which are replaced in files `picketlink.xml` and `login-config.xml`.

5. Start node3 (IDP host) with command:

```
./run.sh -c node3 -b www.node3.com
-Didp-sig.url=http://www.node3.com:8080/idp-sig/
-Dportal.callback.url=http://www.node1.com:8080/portal
```

6. After start the server, you can test that you can access *http://www.node1.com:8080/portal* and when trying to login, you will be redirected to IDP on *http://www.node3.com:8080/idp-sig* where you can login with credentials like john/gtn .

7. Start second host node2. We will use again "www.node3.com" as IDP so startup commands can look like:

```
./run.sh -c node2 -b www.node2.com
-Didp-sig.url=http://www.node3.com:8080/idp-sig/
-Didp.url=http://www.node3.com:8080/idp-sig/
-Dportal.sp.url=http://www.node2.com:8080/portal/dologin
-Didp.host=www.node3.com -Dportal.sp.host=www.node2.com
```

8. Now you can go to *http://www.node2.com:8080/portal* and after click to "Sign in", you will be logged automatically thanks to SSO. When click to "Sign out", you will then be automatically

logged out from both GateIn 3.2 hosts and also IDP host thanks to SAML2 Global logout. If you don't want global logout, you can skip it by commenting of *SAML2LogoutFilter* in `web.xml` (more info about this filter is in first scenario *Section 6.8.7.2, "Single host scenario"*).

6.8.7.5. GateIn 3.2 as Identity Provider

In next scenario, we will use first GateIn 3.2 host as SAML Identity Provider (IDP) and second host as SAML Service Provider (SP).

1. Copy configuration *portal-idp*, which will be used for GateIn 3.2 as IDP

```
cp -r node1 portal-idp
```

2. In file `JBOSS_HOME/server/portal-idp/deploy/gatein.ear/02portal.war/WEB-INF/web.xml` we need to add one special listener to cleaning expired SAML tokens:

```
<listener>
    <listener-class>org.picketlink.identity.federation.web.listeners.IDPHttpSessionListener</listener-class>
</listener>
```

Note

Filter `SAML2LogoutFilter` should be commented in this file as it's used only for SP scenario.

3. In `JBOSS_HOME/server/portal-idp/deploy/gatein.ear/02portal.war/WEB-INF/context.xml` we need to add valve *org.gatein.sso.saml.plugin.valve.PortalIDPWebBrowserSSOValve*:

```
<Valve
  className="org.gatein.sso.saml.plugin.valve.PortalIDPWebBrowserSSOValve" />
```

Note

Previous valve `ServiceProviderAuthenticator` should be commented as it's used only for SP scenario.

4. File `JBOSS_HOME/server/portal-idp/deploy/gatein.ear/02portal.war/WEB-INF/picketlink.xml` needs to be configured as Identity provider. It can look like this:

```
<PicketLink xmlns="urn:picketlink:identity-federation:config:2.1">
                        <PicketLinkIDP          xmlns="urn:picketlink:identity-federation:config:1.0"
 SupportsSignatures="true">
    <IdentityURL>${idp-sig.url::http://localhost:8080/portal/dologin}</IdentityURL>
    <Trust>
      <Domains>localhost,node1.com,node2.com</Domains>
    </Trust>

                                                                                <KeyProvider
 ClassName="org.picketlink.identity.federation.core.impl.KeyStoreKeyManager">
      <Auth Key="KeyStoreURL" Value="/idp-keystore.jks" />
      <Auth Key="KeyStorePass" Value="keystorepass" />
      <Auth Key="SigningKeyPass" Value="keypass" />
      <Auth Key="SigningKeyAlias" Value="idp-key" />
      <ValidatingAlias Key="localhost" Value="sp-cert"/>
      <ValidatingAlias Key="127.0.0.1" Value="sp-cert"/>
      <ValidatingAlias Key="www.node2.com" Value="sp-cert"/>
    </KeyProvider>
  </PicketLinkIDP>

  <Handlers xmlns="urn:picketlink:identity-federation:handler:config:2.1">
    <Handler

 class="org.picketlink.identity.federation.web.handlers.saml2.SAML2IssuerTrustHandler" />
    <Handler
      class="org.picketlink.identity.federation.web.handlers.saml2.SAML2LogOutHandler" />
    <Handler

class="org.picketlink.identity.federation.web.handlers.saml2.SAML2AuthenticationHandler"/
>
    <Handler
```

```
        class="org.picketlink.identity.federation.web.handlers.saml2.RolesGenerationHandler" /
    >
        <Handler

class="org.picketlink.identity.federation.web.handlers.saml2.SAML2SignatureGenerationHandler"
    >
        <Handler

class="org.picketlink.identity.federation.web.handlers.saml2.SAML2SignatureValidationHandler"
    >
      </Handlers>
    </PicketLink>
```

5. File `JBOSS_HOME/server/portal-idp/deploy/gatein.ear/META-INF/gatein-jboss-beans.xml` needs to have all login modules configured as normally, because we will use GateIn 3.2 as SAML IDP now.

```
<application-policy xmlns="urn:jboss:security-beans:1.0" name="gatein-domain">
 <authentication>
   <login-module code="org.gatein.wci.security.WCILoginModule" flag="optional">
     <module-option name="portalContainerName">portal</module-option>
     <module-option name="realmName">gatein-domain</module-option>
   </login-module>
   <login-module code="org.exoplatform.web.security.PortalLoginModule" flag="required">
     <module-option name="portalContainerName">portal</module-option>
     <module-option name="realmName">gatein-domain</module-option>
   </login-module>
     <login-module  code="org.exoplatform.services.security.jaas.SharedStateLoginModule"
flag="required">
     <module-option name="portalContainerName">portal</module-option>
     <module-option name="realmName">gatein-domain</module-option>
   </login-module>

          <login-module    code="org.exoplatform.services.security.j2ee.JbossLoginModule"
flag="required">
     <module-option name="portalContainerName">portal</module-option>
     <module-option name="realmName">gatein-domain</module-option>
   </login-module>

   </authentication>
```

```
</application-policy>
```

6. You need to copy keystore "idp-keystore.jks" created in previous tutorials into `JBOSS_HOME/server/portal-idp/deploy/gatein.ear/02portal.war/WEB-INF/classes/`

7. Start GateIn 3.2 as IDP with:

```
./run.sh -c portal-idp -b www.node1.com -Didp-sig.url=http://www.node1.com:8080/portal/dologin
```

   Note that we use configuration *portal-idp* but we will bind it to *www.node1.com* .

8. Start second node, which will act as SP

```
./run.sh -c node2 -b www.node2.com
-Didp.url=http://www.node1.com:8080/portal/dologin
-Dportal.sp.url=http://www.node2.com:8080/portal/dologin
-Didp.host=www.node1.com -Dportal.sp.host=www.node2.com
```

9. You can test by going to *http://www.node2.com:8080/portal* and when click to "Sign in", you will be redirected to login screen on node1. After successful login, you will be redirected back to node2.

   You can also try other SP applications (like picketlink quickstarts examples from *https://repository.jboss.org/nexus/index.html#nexus-search;quick~picketlink-quickstarts*) and configure them for login against GateIn 3.2 IDP, so you will be able to login into example application on behalf of GateIn 3.2 SAML2 IDP.

Web Services for Remote Portlets (WSRP)

7.1. Introduction

The Web Services for Remote Portlets specification defines a web service interface for accessing and interacting with interactive presentation-oriented web services. It has been produced through the efforts of the Web Services for Remote Portlets (WSRP) OASIS Technical Committee. It is based on the requirements gathered and on the concrete proposals made to the committee.

Scenarios that motivate WSRP functionality include:

- Content hosts, such as portal servers, providing Portlets as presentation-oriented web services that can be used by aggregation engines.
- Aggregating frameworks, including portal servers, consuming presentation-oriented web services offered by content providers and integrating them into the framework.

More information on WSRP can be found on the *official website for WSRP* [http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrp]. We suggest reading the *primer* [http://www.oasis-open.org/committees/download.php/10539/wsrp-primer-1.0.html] for a good, albeit technical, overview of WSRP.

7.2. Level of support in GateIn 3.2

The WSRP Technical Committee defined *WSRP Use Profiles* [http://www.oasis-open.org/committees/download.php/3073] to help with WSRP interoperability. We will refer to terms defined in that document in this section.

GateIn provides a Simple level of support for our WSRP Producer except that out-of-band registration is not currently handled. We support in-band registration and persistent local state (which are defined at the Complex level).

On the Consumer side, GateIn provides a Medium level of support for WSRP, except that we only handle HTML markup (as GateIn itself doesn't handle other markup types). We do support explicit portlet cloning and we fully support the PortletManagement interface.

As far as caching goes, we have Level 1 Producer and Consumer. We support Cookie handling properly on the Consumer and our Producer requires initialization of cookies (as we have found that it improved interoperabilty with some consumers). We don't support custom window states or modes, as GateIn doesn't either. We do, however, support CSS on both the Producer (though it's more a function of the portlets than inherent Producer capability) and Consumer.

While we provide a complete implementation of WSRP 1.0, we do need to go through the *Conformance statements* [http://www.oasis-open.org/committees/download.php/6018] and

perform more interoperability testing (an area that needs to be better supported by the WSRP Technical Committee and Community at large).

GateIn supports WSRP 2.0 with a complete implementation of the non-optional features. The only features that we have not implemented is support for lifetimes and leasing support.

Note

As of version 3.2 of GateIn, WSRP is only activated and supported when GateIn is deployed on JBoss Application Server.

7.3. Deploying GateIn's WSRP services

GateIn provides a complete support of WSRP 1.0 and 2.0 standard interfaces and offers both consumer and producer services. Starting with version 2.1.0-GA of the component, WSRP is packaged as a GateIn extension and is now self-contained in an easy to install package named `$JBOSS_PROFILE_HOME/deploy/gatein-wsrp-integration.ear` where `$JBOSS_PROFILE_HOME` refers to your JBoss AS profile directory (`default`, for instance).

The extension itself is composed of the following components, assuming `$WSRP_VERSION` (at the time of the writing, it was 2.1.0-GA) is the version of the WSRP component and `$PORTAL_VERSION` (at the time of the writing, it was 3.2.0-GA) is the current GateIn version:

- `META-INF` contains files necessary for EAR packaging. The only file that is of interest from a user perspective is `gatein-wsse-consumer.xml` which allows you to configure WS-Security support for the consumer. Please see the *WSRP and WS-Security* section for more details.
- `extension-component-$PORTAL_VERSION.jar`, which contains the components needed to integrate the WSRP component into GateIn. It also includes the default configuration files for the WSRP producer and the default WSRP consumers.
- `extension-config-$PORTAL_VERSION.jar`, which contains the configuration file needed by the GateIn extension mechanism to properly register this EAR as an extension.
- `extension-war-$PORTAL_VERSION.war`, which contains the configuration files needed by the GateIn extension mechanism to properly setup the WSRP service. It includes `wsrp-configuration.xml` which, in particular, configures several options for the `WSRPServiceIntegration` component at the heart of the WSRP integration in GateIn.
- `lib`, which contains the different libraries needed by the WSRP service.
- `wsrp-admin-gui-$WSRP_VERSION.war`, which contains the WSRP Configuration portlet with which you can configure consumers to access remote servers and how the WSRP producer is configured.

- `wsrp-producer-jb5wsss-$WSRP_VERSION.war`, which contains the producer-side support for WS-Security. The only file of interest from a user perspective is `gatein-wsse-producer.xml` which allows you to configure WS-Security support for the producer. Please see the *WSRP and WS-Security* section for more details.

If you're not going to use WSRP in GateIn, it won't adversely affect your installation to leave it as-is. Otherwise, you can just remove the `gatein-wsrp-integration.ear` file from your AS deploy directory.

7.3.1. Considerations to use WSRP when running GateIn on a non-default port or hostname

JBoss WS (the web service stack that GateIn uses) should take care of the details of updating the port and host name used in WSDL. See the *JBoss WS user guide on that subject* [http://community.jboss.org/wiki/JBossWS-UserGuide#Configuration] for more details.

Of course, if you have modified the host name and port on which your server runs, you will need to update the configuration for the consumer used to consume GateIn's 'self' producer. Please refer to the *Section 7.7, "Consuming remote WSRP portlets in GateIn"* to learn how to do so.

7.4. Securing WSRP

7.4.1. Considerations to use WSRP with SSL

It is possible to use WSRP over SSL for secure exchange of data. Please refer to the *instructions* [http://community.jboss.org/wiki/ConfiguringWSRPforuseoverSSL] on how to do so from *GateIn's wiki* [http://community.jboss.org/wiki/GateIn].

7.4.2. WSRP and WS-Security

Portlets may present different data or options depending on the currently authenticated user. For remote portlets, this means having to propagate the user credentials from the consumer back to the producer in a safe and secure manner. The WSRP specification does not directly specify how this should be accomplished, but delegates this work to the existing WS-Security standards.

Web Container Compatibility

WSRP and WS-Security is currently only supported on GateIn when running on top of JBoss AS 5.

Encryption

You will want to encrypt the credentials being sent between the consumer and producer, otherwise they will be sent in plain text and could be easily intercepted.

You can either configure WS-Security to encrypt and sign the SOAP messages being sent, or secure the transport layer by using an https endpoint. Failure to encrypt the soap message or transport layer will result in the username and password being sent in plain text. **Use of encryption is strongly recommended.**

Credentials

When the consumer sends the user credentials to the producer, it is sending the credentials for the currently authenticated user in the consumer. This makes signing in to remote portlets transparent to end users, but also requires that the producer and consumer use the same credentials. This means that the username and password must be the same and valid on both servers.

The recommended approach for this situation would be to use a common ldap configuration. Please see the user guide on how to configure ldap for use with GateIn

The GateIn Wiki article, *GateIn WSRP and Web Service Security* [http://community.jboss.org/wiki/GateInWSRPAndWebServiceSecurity], also provides a step-by-step example on how to configure WSRP with WS-Security.

7.4.2.1. WS-Security Configuration

GateIn uses JBossWS Native to handle ws-security. Please see the WS-Security section of the *JBoss AS 5 Administration and Configuration Guide* [http://www.jboss.org/jbossas/docs/5-x] for indepth configuration options. Please note that since the consumer passes its credentials to the producer, the consumer will act as the wss client and the producer will act as the wss server.

The JBossWS Native configuration files which need to be configure for WSRP are to be located in the /conf/gatein directory. These files may not exist by default and may need to be added.

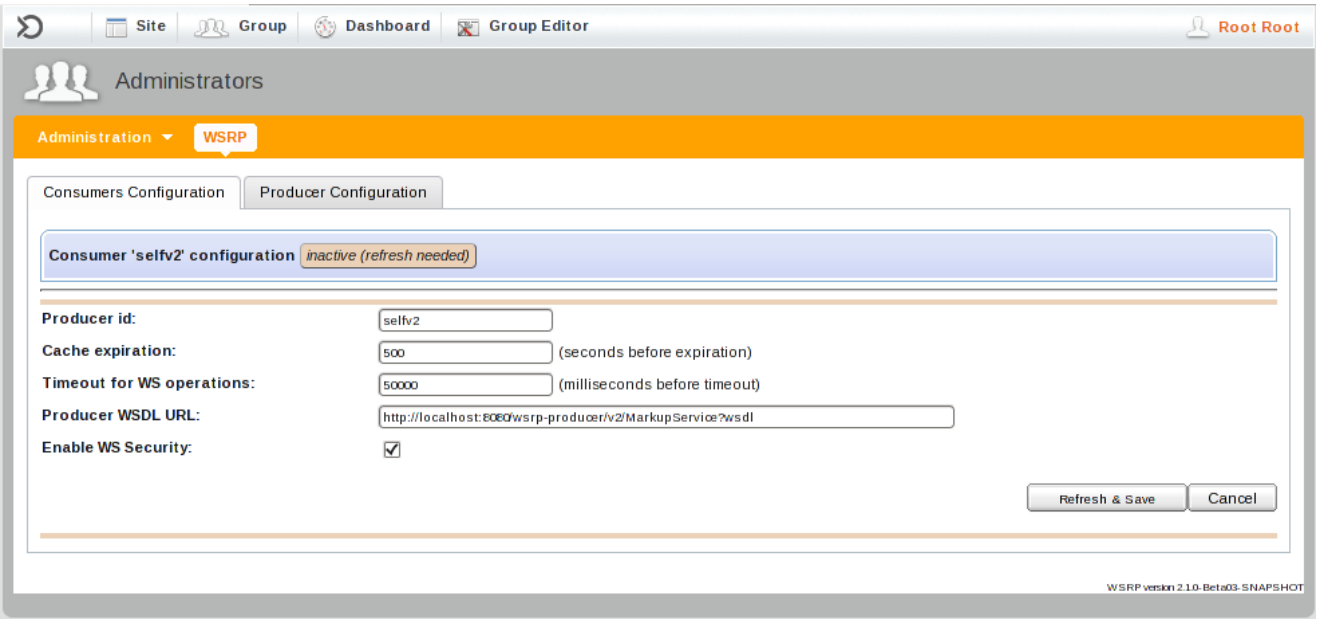
- `conf/gatein/gatein-wsse-consumer.xml`: JBossWS configuration file for the consumer.
- `conf/gatein/gatein-wsse-producer.xml` : JBossWS configuration file for the producer.

7.4.2.2. WS-Security Producer Configuration

Other than the JBossWS configuration file mention above, no other configuration changes should be necessary for the producer.

7.4.2.3. WS-Security Consumer Configuration

In the WSRP Configuration portlet, in the consumer configuration options, you will need to check the 'Enable WS Security' checkbox if you wish to send the user credentials to the producer.



7.5. Making a portlet remotable

Important

Only JSR-286 (Portlet 2.0) portlets can be made remotable as the mechanism to expose a portlet to WSRP relies on a JSR-286-only functionality.

GateIn does **NOT**, by default, expose local portlets for consumption by remote WSRP consumers. In order to make a portlet remotely available, it must be made "remotable" by marking it as such in the associated `portlet.xml`. This is accomplished by using a specific `org.gatein.pc.remotable container-runtime-option`. Setting its value to `true` makes the portlet available for remote consumption, while setting its value to `false` will not publish it remotely. As specifying the remotable status for a portlet is optional, you do not need to do anything if you don't need your portlet to be available remotely.

In the following example, the "BasicPortlet" portlet is specified as being remotable.

Example 7.1.

```
<?xml version="1.0" standalone="yes"?>
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
          xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd http://
java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
          version="2.0">
<portlet-app>
  <portlet>
    <portlet-name>BasicPortlet</portlet-name>

    ...

    <container-runtime-option>
      <name>org.gatein.pc.remotable</name>
      <value>true</value>
    </container-runtime-option>
  </portlet>
</portlet-app>
```

It is also possible to specify that all the portlets declared within a given portlet application to be remotable by default. This is done by specifying the `container-runtime-option` at the `portlet-app` element level. Individual portlets can override that value to not be remotely exposed. Let's look at an example:

Example 7.2.

```
<?xml version="1.0" standalone="yes"?>
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
          xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
                xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd http://
java.sun.com/xml/ns/portlet/portlet-app_2_0.xsd"
          version="2.0">
<portlet-app>

  <portlet>
    <portlet-name>RemotelyExposedPortlet</portlet-name>
    ...
  </portlet>
  <portlet>
    <portlet-name>NotRemotelyExposedPortlet</portlet-name>
    ...
    <container-runtime-option>
```

```
        <name>org.gatein.pc.remotable</name>
        <value>false</value>
      </container-runtime-option>
    </portlet>

    <container-runtime-option>
      <name>org.gatein.pc.remotable</name>
      <value>true</value>
    </container-runtime-option>
</portlet-app>
```

In the example above, we defined two portlets. The `org.gatein.pc.remotable container-runtime-option` being set to `true` at the `portlet-app` level, all portlets defined in this particular portlet application are exposed remotely by GateIn's WSRP producer. Note, however, that it is possible to override the default behavior: specifying a value for the `org.gatein.pc.remotable container-runtime-option` at the `portlet` level will take precedence over the default. In the example above, the `RemotelyExposedPortlet` inherits the remotable status defined at the `portlet-app` level since it does not specify a value for the `org.gatein.pc.remotable container-runtime-option`. The`NotRemotelyExposedPortlet`, however, overrides the default behavior and is not remotely exposed. Note that in the absence of a top-level `org.gatein.pc.remotable container-runtime-option` value set to `true`, portlets are NOT remotely exposed.

7.6. Consuming GateIn's WSRP portlets from a remote Consumer

WSRP Producers vary a lot as far as how they are configured. Most of them require that you specify the URL for the Producer's WSDL definition. Please refer to the remote producer's documentation for specific instructions. For instructions on how to do so in GateIn, please refer to *Section 7.7, "Consuming remote WSRP portlets in GateIn"*.

GateIn's Producer is automatically set up when you deploy a portal instance with the WSRP service. You can access the WSDL file at `http://{hostname}:{port}/wsrp-producer/v2/MarkupService?wsdl`. If you wish to use only the WSRP 1 compliant version of the producer, please use the WSDL file found at `http://{hostname}:{port}/wsrp-producer/v1/MarkupService?wsdl`. The default hostname is `localhost` and the default port is 8080.

7.7. Consuming remote WSRP portlets in GateIn

7.7.1. Overview

To be able to consume WSRP portlets exposed by a remote producer, GateIn's WSRP consumer needs to know how to access that remote producer. One can configure access to a remote

producer using the provided configuration portlet. Alternatively, it is also possible to configure access to remote producers using an XML descriptor, though it is recommended (and easier) to do so via the configuration portlet.

Once a remote producer has been configured, the portlets that it exposes are then available in the Application Registry to be added to categories and then to pages.

7.7.2. Configuring a remote producer using the configuration portlet

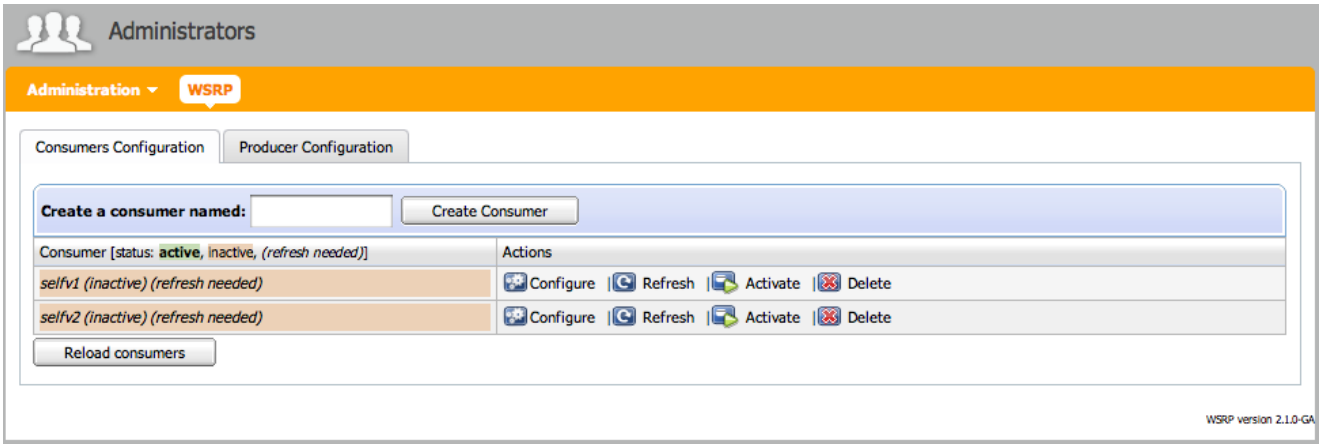
Let's work through the steps of defining access to a remote producer using the configuration portlet so that its portlets can be consumed within GateIn. We will configure access to NetUnity's public WSRP producer.

Note

Some WSRP producers do not support chunked encoding that is activated by default by JBoss WS. If your producer does not support chunked encoding, your consumer will not be able to properly connect to the producer. This will manifest itself with the following error: `Caused by: org.jboss.ws.WSException: Invalid HTTP server response [503] - Service Unavailable`. Please see this GateIn's *wiki page* [http://community.jboss.org/wiki/Workaroundwhenchunkedencodingisnotsupported] for more details.

GateIn provides a portlet to configure access (among other functions) to remote WSRP Producers graphically. Starting with 3.2, the WSRP configuration portlet is installed by default. You can find it at *http://localhost:8080/portal/login?initialURI=%2Fportal%2Fprivate%2Fclassic%2FwsrpConfigurationp&username=root&password=gtn* [http://localhost:8080/portal/login?initialURI=%2Fportal%2Fprivate%2Fclassic%2FwsrpConfiguration&username=root&password=gtn]

You should see a screen similar to:



This screen presents all the configured Consumers associated with their status and possible actions on them. A Consumer can be active or inactive. Activating a Consumer means that it is ready to act as a portlet provider. Note also that a Consumer can be marked as requiring refresh meaning that the information held about it might not be up to date and refreshing it from the remote Producer might be a good idea. This can happen for several reasons: the service description for that remote Producer has not been fetched yet, the cached version has expired or modifications have been made to the configuration that could potentially invalidate it, thus requiring re-validation of the information.

Note

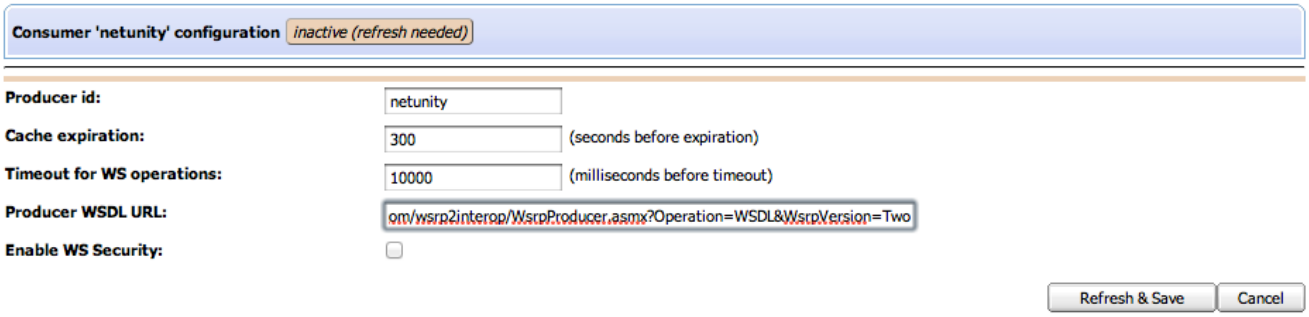
The WSRP configuration didn't use to be installed by default in previous versions of GateIn. We include here the legacy instructions on how to install this portlet in case you ever need to re-install it.

Use the usual procedure to log in as a Portal administrator and go to the Application Registry. With the default install, you can just go to *http://localhost:8080/portal/login?initialURI=%2Fportal%2Fprivate%2Fclassic%2Fadministration%2Fregistry&username=root&password=gtn* [http://localhost:8080/portal/login?initialURI=%2Fportal%2Fprivate%2Fclassic%2Fadministration%2Fregistry&username=root&password=gtn] Add the WSRP Configuration portlet to the Administration category. If you use the Import Applications functionality, the WSRP Configuration portlet will be automatically added to the Administration category.

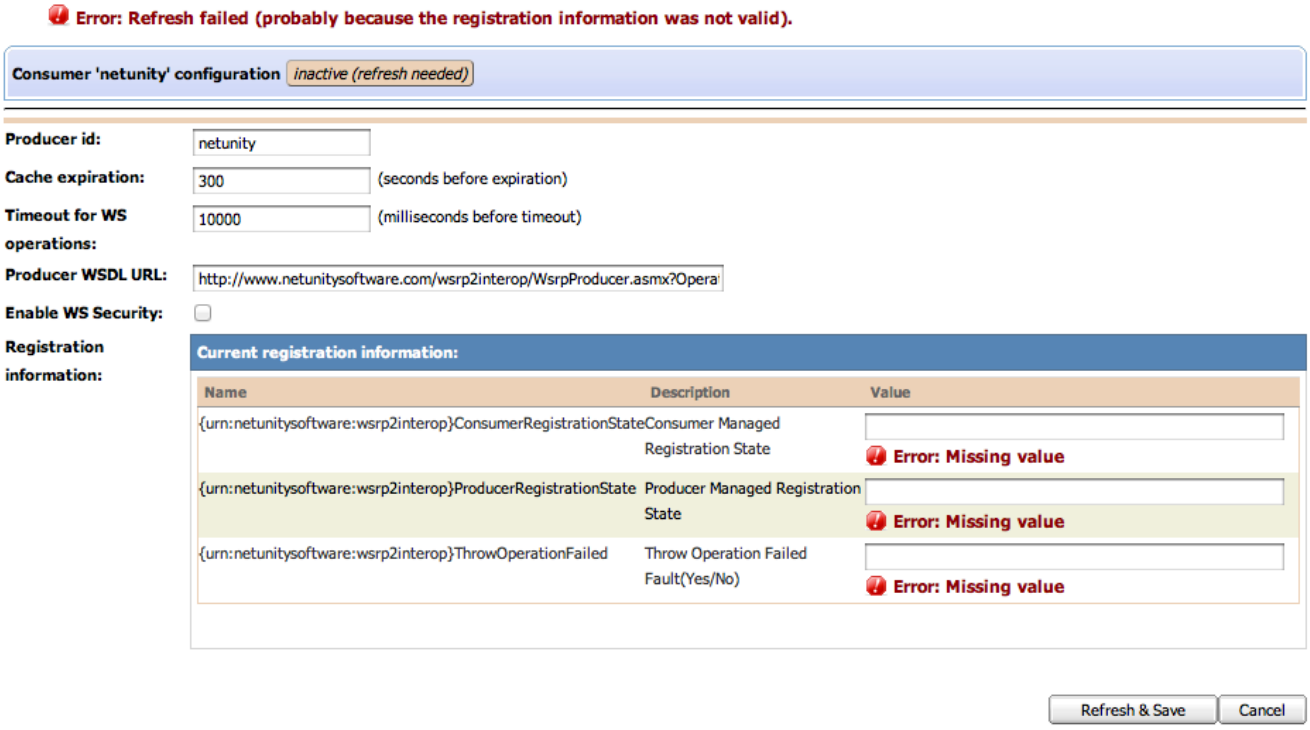
Now that the portlet is added to a category, it can be added to a page and used. We recommend adding it to the same page as the Application Registry as operations relating to WSRP and adding portlets to categories are somewhat related as we will see. Go ahead and add the WSRP Configuration portlet to the page using the standard procedure.

Next, we create a new Consumer which we will call `netunity`. Type "`netunity`" in the "Create a consumer named:" field then click on "Create consumer":

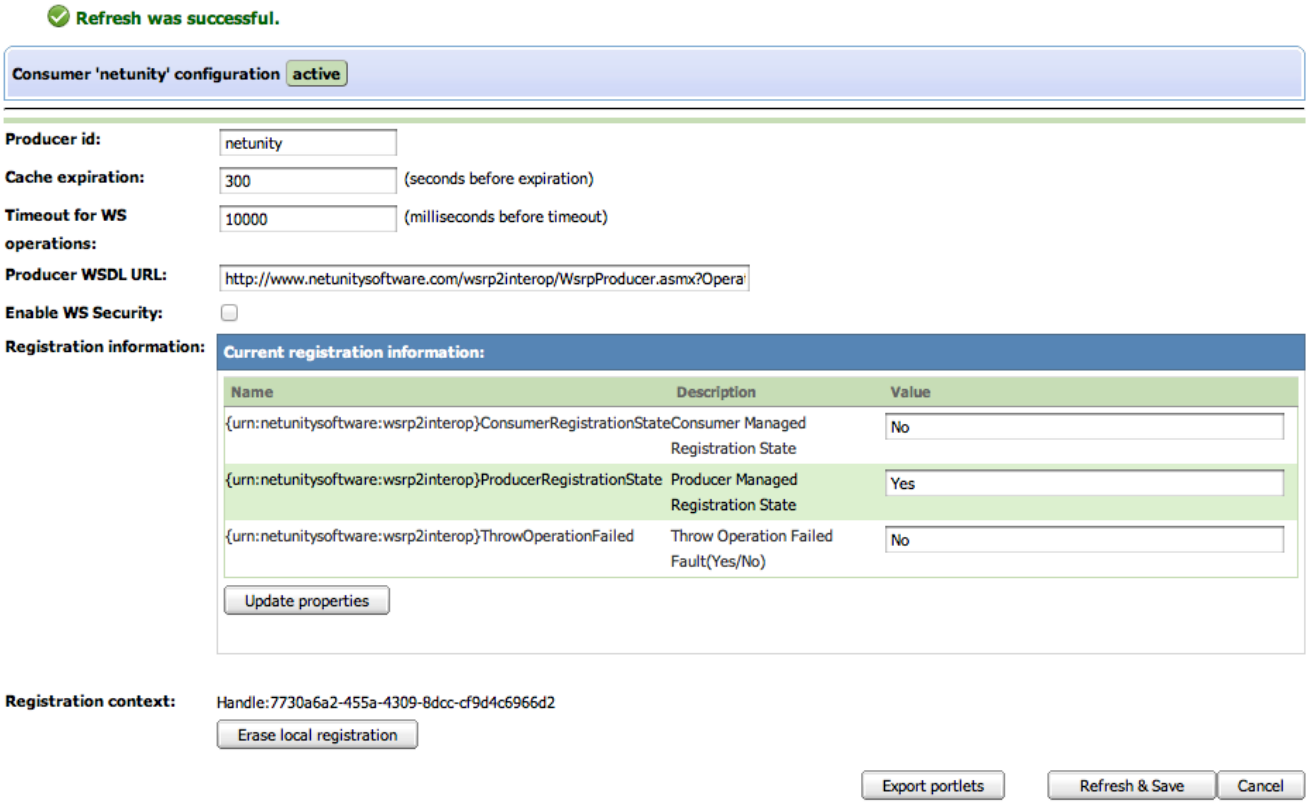
You should now see a form allowing you to enter/modify the information about the Consumer. Set the cache expiration value to 300 seconds, leave the default timeout value for web services (WS) operations and enter the WSDL URL for the producer in the text field and press the "Refresh & Save" button:



This will retrieve the service description associated with the Producer which WSRP interface is described by the WSDL file found at the URL you just entered. In our case, querying the service description will allow us to learn that the Producer requires registration, requested three registration properties and that we are missing values for these properties:



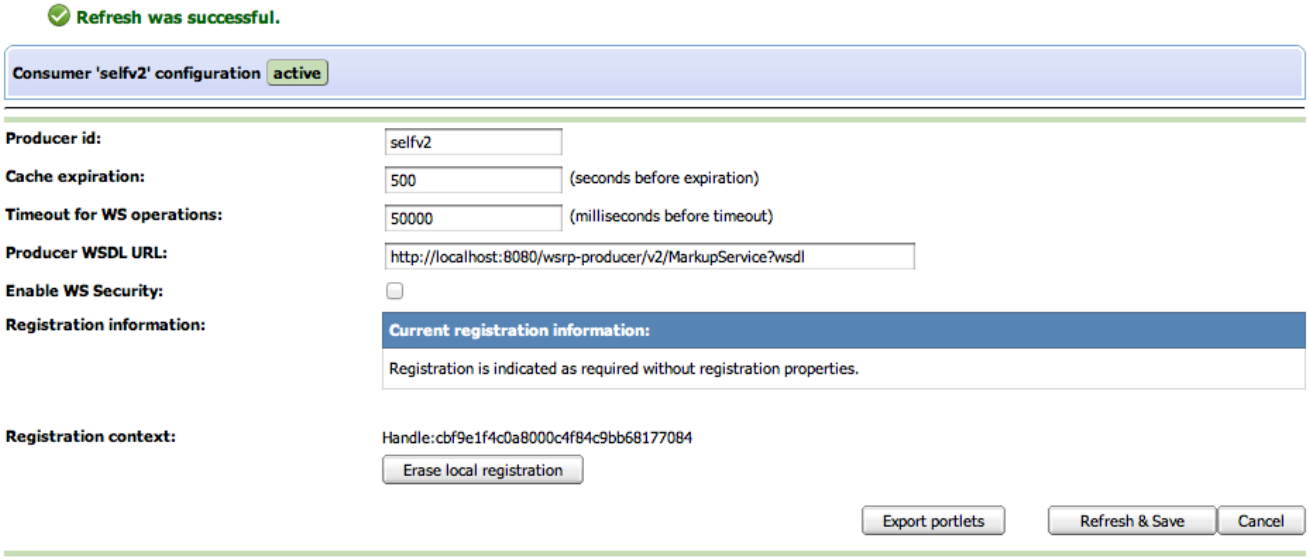
This particular producer requests simple `Yes` or `No` values for the three registration properties. Entering `No`, `Yes` and `No` (in that order) for the values and then pressing the "Refresh & Save" button should result in:



Note

At this point, there is no automated way to learn about which possible values (if any) are expected by the remote Producer. Sometimes, the possible values will be indicated in the registration property description but this is not always the case... Please refer to the specific Producer's documentation.

If we had been dealing with a producer which required registration but didn't require any registration properties, as is the case for the `selfv2` consumer (the consumer that accesses the portlets made remotely available by GateIn's producer via WSRP 2), we'd have seen something similar to the screenshot below, after pressing the "Refresh & Save" button:



7.7.3. Configuring access to remote producers via XML

While we recommend you use the WSRP Configuration portlet to configure Consumers, we provide an alternative way to configure consumers by adding an XML file called `wsrp-consumers-config.xml` in the `$JBOSS_PROFILE_HOME/conf/gatein/` directory.

Note

An XML Schema defining which elements are available to configure Consumers via XML can be found in `$JBOSS_PROFILE_HOME/deploy/gatein-wsrp-integration.ear/lib/wsrp-integration-api-$WSRP_VERSION.jar/xsd/gatein_wsrp_consumer_1_0.xsd`

Important

It is important to note that once the XML configuration file for consumers has been read upon the WSRP service first start, the associated information is put under control of JCR (Java Content Repository). Subsequent launches of the WSRP service will use the JCR-stored information and ignore the content of the XML configuration file.

7.7.3.1. Required configuration information

Let's now look at which information needs to be provided to configure access to a remote producer.

First, we need to provide an identifier for the producer we are configuring so that we can refer to it afterwards. This is accomplished via the mandatory `id` attribute of the `<wsrp-producer>` element.

GateIn also needs to learn about the remote producer's endpoints to be able to connect to the remote web services and perform WSRP invocations. This is accomplished by specifying the URL for the WSDL description for the remote WSRP service, using the `<endpoint-wsdl-url>` element.

Both the `id` attribute and `<endpoint-wsdl-url>` elements are required for a functional remote producer configuration.

7.7.3.2. Optional configuration

It is also possible to provide addtional configuration, which, in some cases, might be important to establish a proper connection to the remote producer.

One such optional configuration concerns caching. To prevent useless roundtrips between the local consumer and the remote producer, it is possible to cache some of the information sent by the producer (such as the list of offered portlets) for a given duration. The rate at which the information is refreshed is defined by the `expiration-cache` attribute of the `<wsrp-producer>` element which specifies the refreshing period in seconds. For example, providing a value of 120 for expiration-cache means that the producer information will not be refreshed for 2 minutes after it has been somehow accessed. If no value is provided, GateIn will always access the remote producer regardless of whether the remote information has changed or not. Since, in most instances, the information provided by the producer does not change often, we recommend that you use this caching facility to minimize bandwidth usage.

It is also possible to define a timeout after which WS operations are considered as failed. This is helpful to avoid blocking the WSRP service, waiting forever on the service that doesn't answer. Use the `ws-timeout` attribute of the `<wsrp-producer>` element to specify how many milliseconds the WSRP service will wait for a response from the remote producer before timing out and giving up.

Additionally, some producers require consumers to register with them before authorizing them to access their offered portlets. If you know that information beforehand, you can provide the required registration information in the producer configuration so that the consumer can register with the remote producer when required.

Note

At this time, though, only simple String properties are supported and it is not possible to configure complex registration data. This should, however, be sufficient for most cases.

Registration configuration is done via the `<registration-data>` element. Since GateIn can generate the mandatory information for you, if the remote producer does not require any registration properties, you only need to provide an empty `<registration-data>` element. Values for the registration properties required by the remote producer can be provided via `<property>` elements. See the example below for more details. Additionally, you can override the default consumer name automatically provided by GateIn via the `<consumer-name>` element. If you

choose to provide a consumer name, please remember that this should uniquely identify your consumer.

7.7.3.3. Examples

Here is the configuration of the `selfv1` and `selfv2` consumers as found in `$JBOSS_PROFILE_HOME/deploy/gatein-wsrp-integration.ear/lib/extension-component-$WSRP_VERSION.jar/conf/wsrp-consumers-config.xml` with a cache expiring every 500 seconds and with a 50 second timeout for web service operations.

Note

This file contains the default configuration and you shouldn't need to edit it. If you want to make modifications to it, we recommend that you follow the procedure detailed in *Section 7.7.2, "Configuring a remote producer using the configuration portlet"*.

Example 7.3.

```
<?xml version='1.0' encoding='UTF-8' ?>
<deployments xmlns="http://www.gatein.org/xml/ns/gatein_wsrp_consumer_1_0"
           xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:schemaLocation="http://www.gatein.org/xml/ns/gatein_wsrp_consumer_1_0 http://
www.jboss.org/portal/xsd/gatein_wsrp_consumer_1_0.xsd">
  <deployment>
    <wsrp-producer id="selfv1" expiration-cache="500" ws-timeout="50000">
      <endpoint-wsdl-url>http://localhost:8080/wsrp-producer/v1/MarkupService?wsdl</endpoint-
wsdl-url>
       <registration-data/>
    </wsrp-producer>
  </deployment>
  <deployment>
    <wsrp-producer id="selfv2" expiration-cache="500" ws-timeout="50000">
      <endpoint-wsdl-url>http://localhost:8080/wsrp-producer/v2/MarkupService?wsdl</endpoint-
wsdl-url>
       <registration-data/>
    </wsrp-producer>
  </deployment>
</deployments>
```

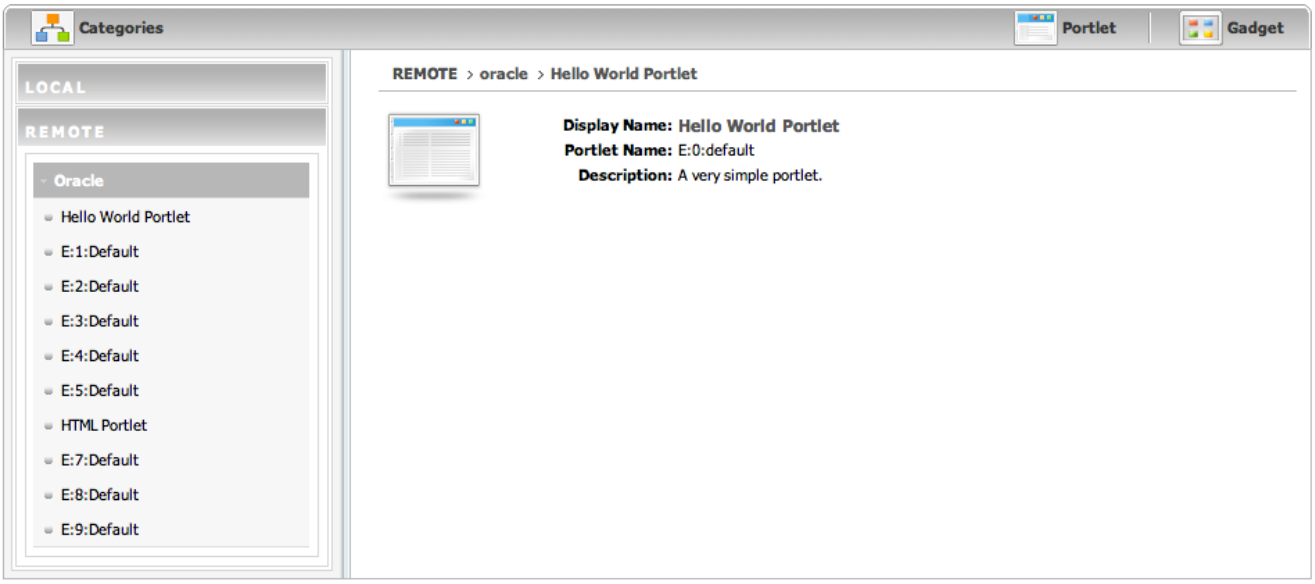
Here is an example of a WSRP descriptor with registration data and cache expiring every minute:

Example 7.4.

```
<?xml version='1.0' encoding='UTF-8' ?>
<deployments xmlns="http://www.gatein.org/xml/ns/gatein_wsrp_consumer_1_0"
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
              xsi:schemaLocation="http://www.gatein.org/xml/ns/gatein_wsrp_consumer_1_0 http://
www.jboss.org/portal/xsd/gatein_wsrp_consumer_1_0.xsd">
<deployments>
  <deployment>
    <wsrp-producer id="AnotherProducer" expiration-cache="60">
      <endpoint-wsdl-url>http://example.com/producer/producer?WSDL</endpoint-wsdl-url>
      <registration-data>
        <property>
          <name>property name</name>
          <lang>en</lang>
          <value>property value</value>
        </property>
      </registration-data>
    </wsrp-producer>
  </deployment>
</deployments>
```

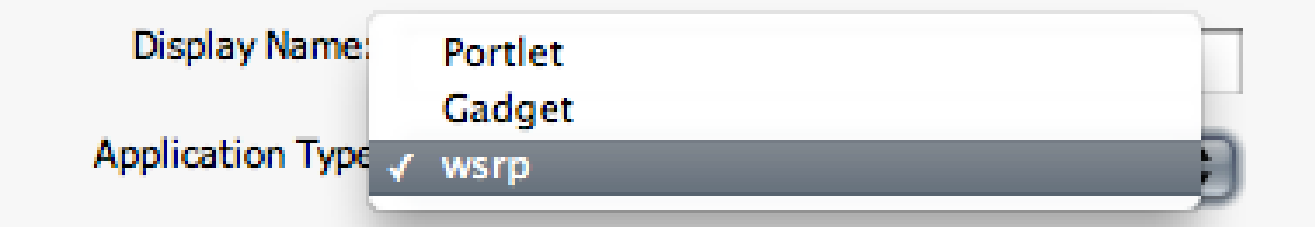
7.7.4. Adding remote portlets to categories

If we go to the Application Registry and examine the available portlets by clicking on the Portlet link, you will now be able to see remote portlets if you click on the REMOTE tab in the left column:



These portlets are, of course, available to be used such as regular portlets: they can be used in categories and added to pages. If you use the Import Applications functionality, they will also be automatically imported in categories based on the keywords they define.

More specifically, if you want to add a WSRP portlet to a category, you can access these portlets by selecting `wsrp` in the Application Type drop-down menu:



7.7.5. Adding remote portlets to pages

Since remote portlets can be manipulated just like regular portlets, you can add them to pages just like you would do for a regular portlet. Please refer to the appropriate section of the documentation for how to do so.

Of note, though, is that, starting with version 3.2 of GateIn (5.2 of EPP), it is now possible to also add a remote portlet to a `pages.xml` configuration file. This is accomplished using the `<wsrp>` element instead of the `<portlet>` element in your `pages.xml` document. While `<portlet>` references a local portlet using the name of the application in which the portlet is contained and the portlet name itself to identify which portlet to use, `<wsrp>` references a remote portlet using a combination of the consumer identifier for the producer publishing the portlet and the portlet handle identifying the portlet within the context of the producer.

The format for such a reference to a remote portlet is a follows: first, the identifier of the consumer that accesses the remote producer publishing the remote portlet, then a separator (currently a period (`.`)) and finally the portlet handle for that portlet, which is a string provided by the producer to identify the portlet.

Since there currently is no easy way to determine the correct portlet handle, we recommend that you use the graphical user interface to add remote portlets to pages instead of using `pages.xml`.

Note

For remote portlets published by GateIn's WSRP producer, the portlet handles are, at the time of this writing, following the `/<portlet application name>.<portlet name>` format.

7.7.5.1. Example

In the following example, we define 2 portlets for a page named `Test` in our `pages.xml` configuration. They are actually references to the same portlet, albeit one accessed locally and the other one accessing it via the `selfv2` consumer which consumes GateIn's WSRP producer. You

can see that the first one is local (the `<portlet-application>` with the '`Added locally`' title) and follows the usual declaration. The second portlet (the one with the '`Added from selfv2 consumer`' title) comes from the `selfv2` consumer and uses the `<wsrp>` element instead of `<portlet>` element and follows the format for portlets coming from the GateIn's WSRP producer.

Example 7.5.

```
<page>
  <name>Test</name>

  ...

  <portlet-application>
    <portlet>
      <application-ref>richFacesPortlet</application-ref>
      <portlet-ref>richFacesPortlet</portlet-ref>
    </portlet>
    <title>Added locally</title>

    ...

  </portlet-application>

  <portlet-application>
    <wsrp>selfv2./richFacesPortlet.richFacesPortlet</wsrp>
    <title>Added from selfv2 consumer</title>

    ...

  </portlet-application>
</page>
```

7.8. Consumers maintenance

7.8.1. Modifying a currently held registration

7.8.1.1. Registration modification for service upgrade

Producers often offer several levels of service depending on consumers' subscription levels (for example). This is implemented at the WSRP level with the registration concept: producers can assert which level of service to provide to consumers based on the values of given registration properties.

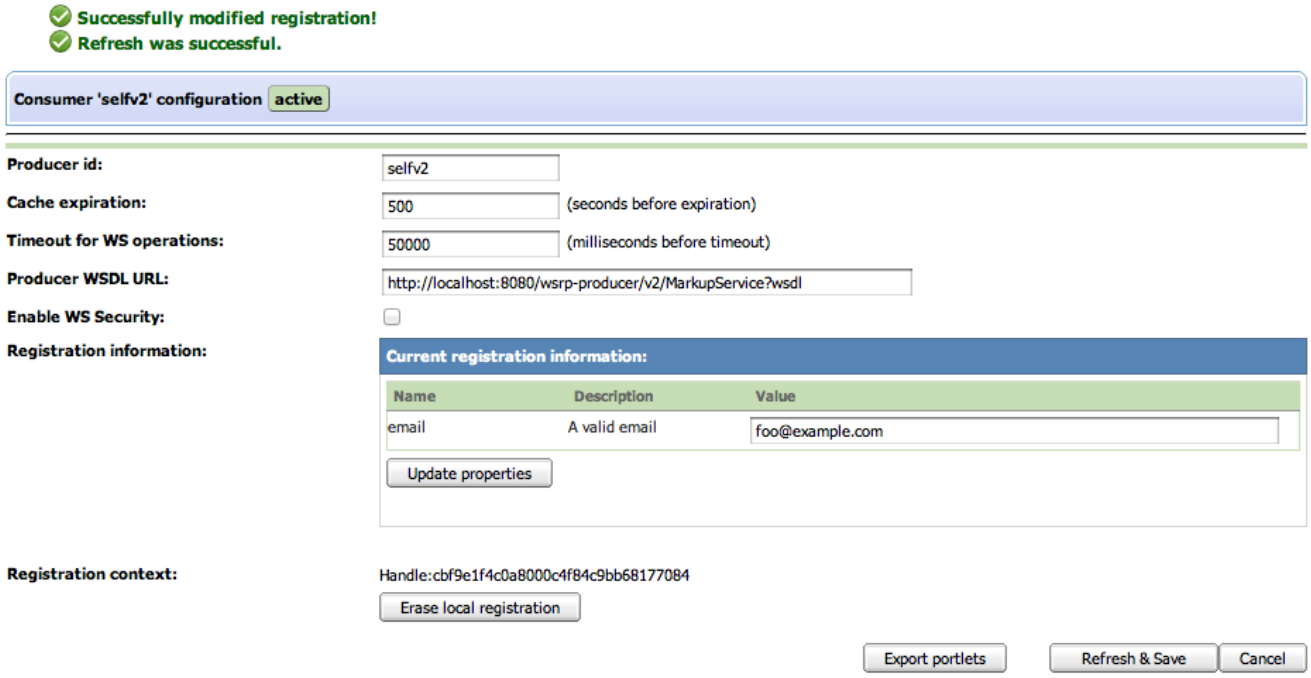
There might also be cases where you just want to update the registration information because it has changed. For example, the producer required you to provide a valid email and the previously email address is not valid anymore and needs to be updated.

It is therefore sometimes necessary to modify the registration that concretizes the service agreement between a consumer and a producer. Let's take the example of a producer requiring a valid email (via an `email` registration property) as part of its required information that consumers need to provide to be properly registered.

Suppose now that we would like to update the email address that we provided to the remote producer when we first registered. We will need to tell the producer that our registration data has been modified. Let's see how to do this. Select the consumer for the remote producer in the available consumers list to display its configuration. Assuming you want to change the email you registered with to `foo@example.com`, change its value in the field for the `email` registration property:

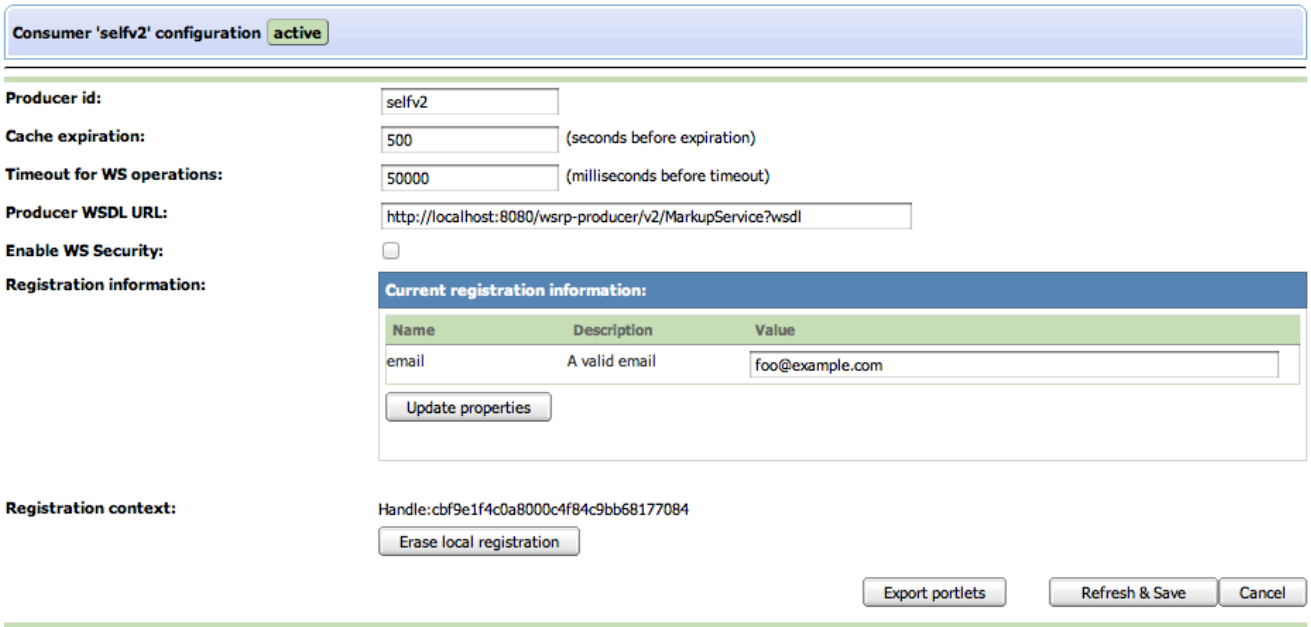
Now click on "Update properties" to save the change. A "Modify registration" button should now appear to let you send this new data to the remote producer:

Click on this new button and, if everything went well and your updated registration has been accepted by the remote producer, you should see something similar to:



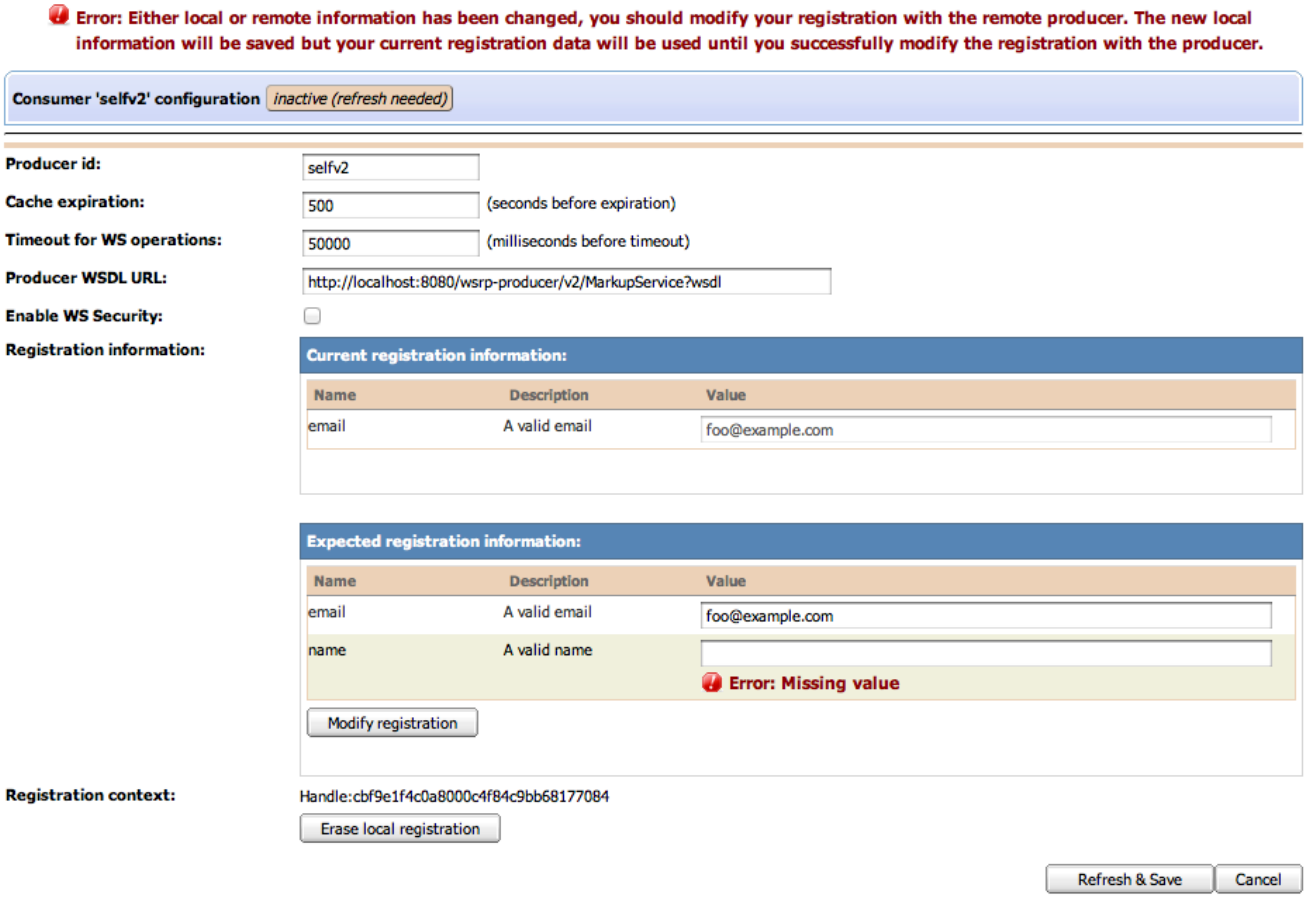
7.8.1.2. Registration modification on producer error

It can also happen that a producer administrator decided to change its requirement for registered consumers. GateIn will attempt to help you in this situation. Let's walk through an example using the `selfv2` consumer. Let's assume that registration is requiring a valid value for an `email` registration property. If you go to the configuration screen for this consumer, you should see:

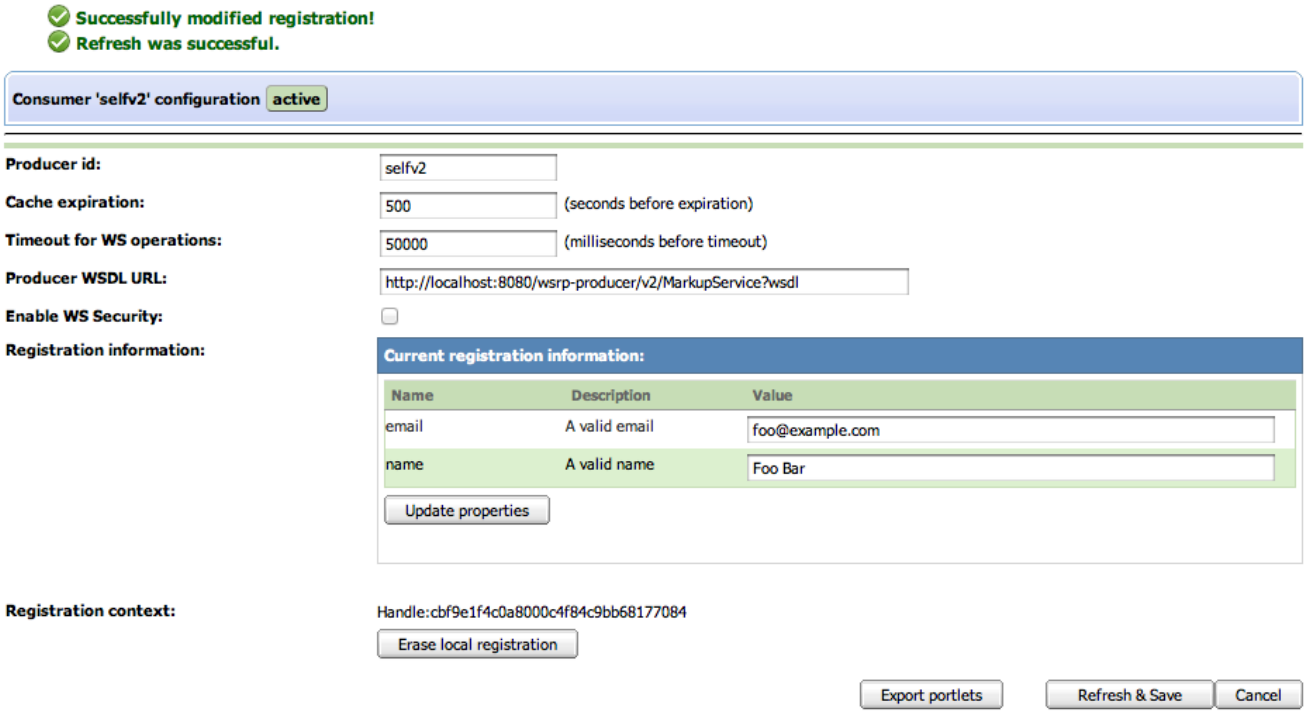


Now suppose that the administrator of the producer now additionaly requires a value to be provided for a `name` registration property. We will actually see how to do perform this operation in GateIn when we examine how to configure GateIn's producer in *Section 7.9, "Configuring GateIn's WSRP Producer"*. Operations with this producer will now fail. If you suspect that a registration

modification is required, you should go to the configuration screen for this remote producer and refresh the information held by the consumer by pressing "Refresh & Save":



As you can see, the configuration screen now shows the currently held registration information and the expected information from the producer. Enter a value for the `name` property and then click on "Modify registration". If all went well and the producer accepted your new registration data, you should see something similar to:

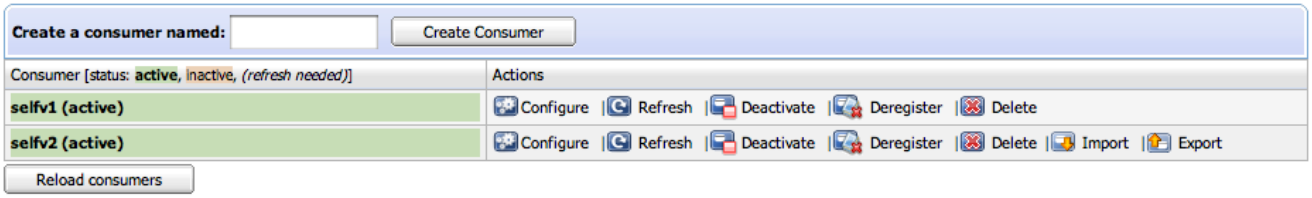


Note

WSRP 1 makes it rather difficult to ascertain for sure what caused an `OperationFailedFault` as it is the generic exception returned by producers if something didn't quite happen as expected during a method invocation. This means that `OperationFailedFault` can be caused by several different reasons, one of them being a request to modify the registration data. Please take a look at the log files to see if you can gather more information as to what happened. WSRP 2 introduces an exception that is specific to a request to modify registrations thus reducing the ambiguity that exists when using WSRP 1.

7.8.2. Consumer operations

Several operations are available from the consumer list view of the WSRP configuration portlet:



The available operations are:

- Configure: displays the consumer details and allows user to edit them

- Refresh: forces the consumer to retrieve the service description from the remote producer to refresh the local information (offered portlets, registration information, etc.)
- Activate/Deactivate: activates/deactivates a consumer, governing whether it will be available to provide portlets and receive portlet invocations
- Register/Deregister: registers/deregisters a consumer based on whether registration is required and/or acquired
- Delete: destroys the consumer, after deregistering it if it was registered
- Export: exports some or all of the consumer's portlets to be able to later import them in a different context
- Import: imports some or all of previously exported portlets

Note

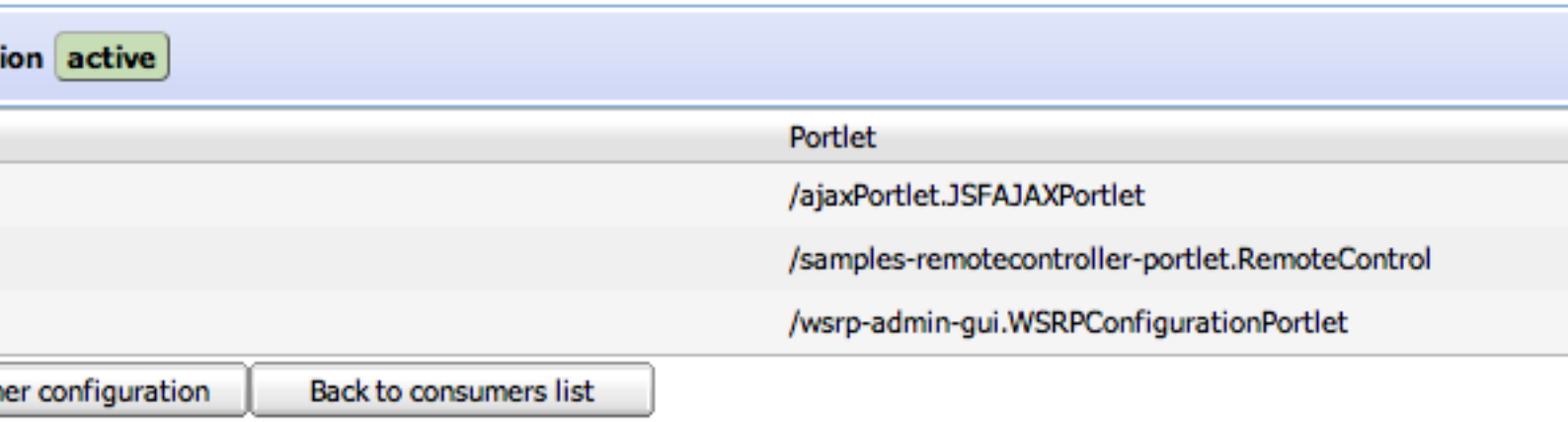
Import/Export functionality is only available to WSRP 2 consumers of producers that support this optional functionality. Import functionality is only available if portlets had previously been exported.

7.8.3. Importing and exporting portlets

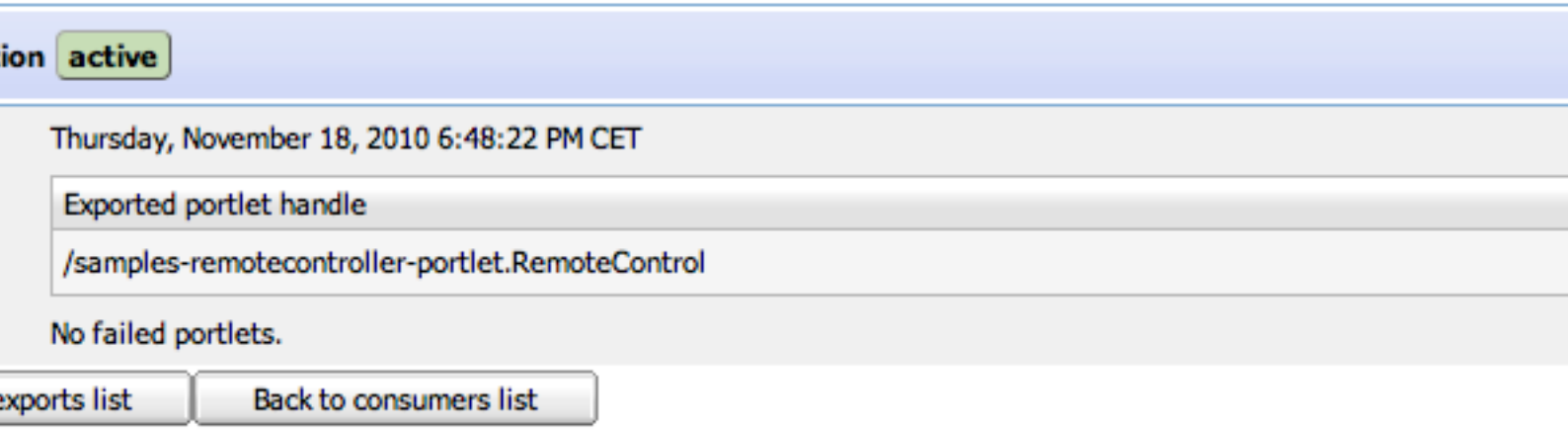
Import and export are new functionalities added in WSRP 2. Exporting a portlet allows a consumer to get an opaque representation of the portlet which can then be use by the corresponding import operation to reconstitute it. It is mostly used in migration scenarios during batch operations. Since GateIn does not currently support automated migration of portal data, the functionality that we provide as part of WSRP 2 is necessarily less complete than it could be with full portal support.

The import/export implementation in GateIn (available since 3.1) allows users to export portlets from a given consumer. These portlets can then be used to replace existing content on pages. This is accomplished by assigning previously exported portlets to replace the content displayed by windows on the portal's pages. Let us walk through an example to make things clearer.

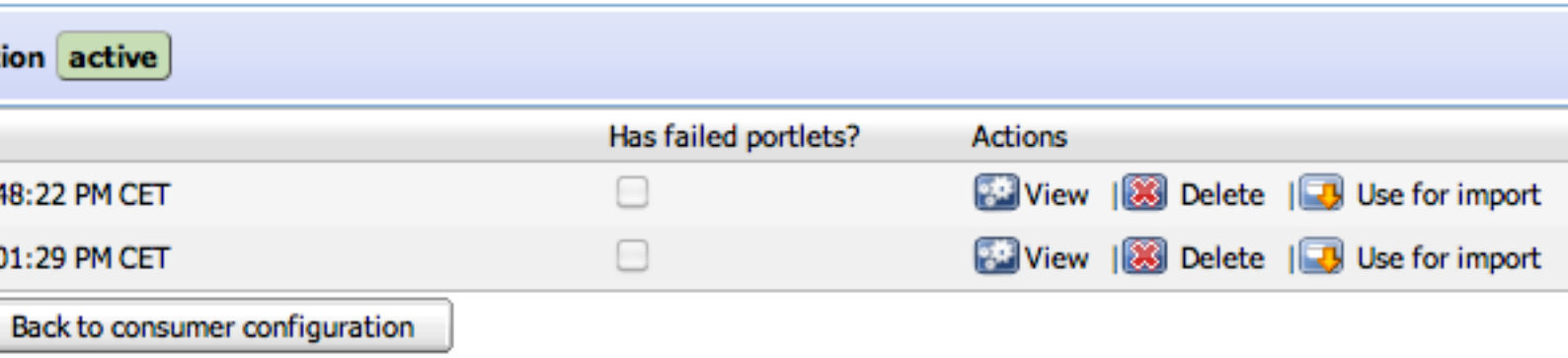
Clicking on the "Export" action for a given consumer will display the list of portlets currently made available by this specific consumer. An example of such a list is shown below:



Once portlets have been selected, they can be exported by clicking on the "Export" button thus making them available for later import:



You can re-import the portlets directly by pressing the "Use for import" button or, on the Consumers list page, using the "Import" action for a given consumer. Let's assume that you used that second option and that you currently have several available sets of previously exported portlets to import from. After clicking the action link, you should see a screen similar to the one below:

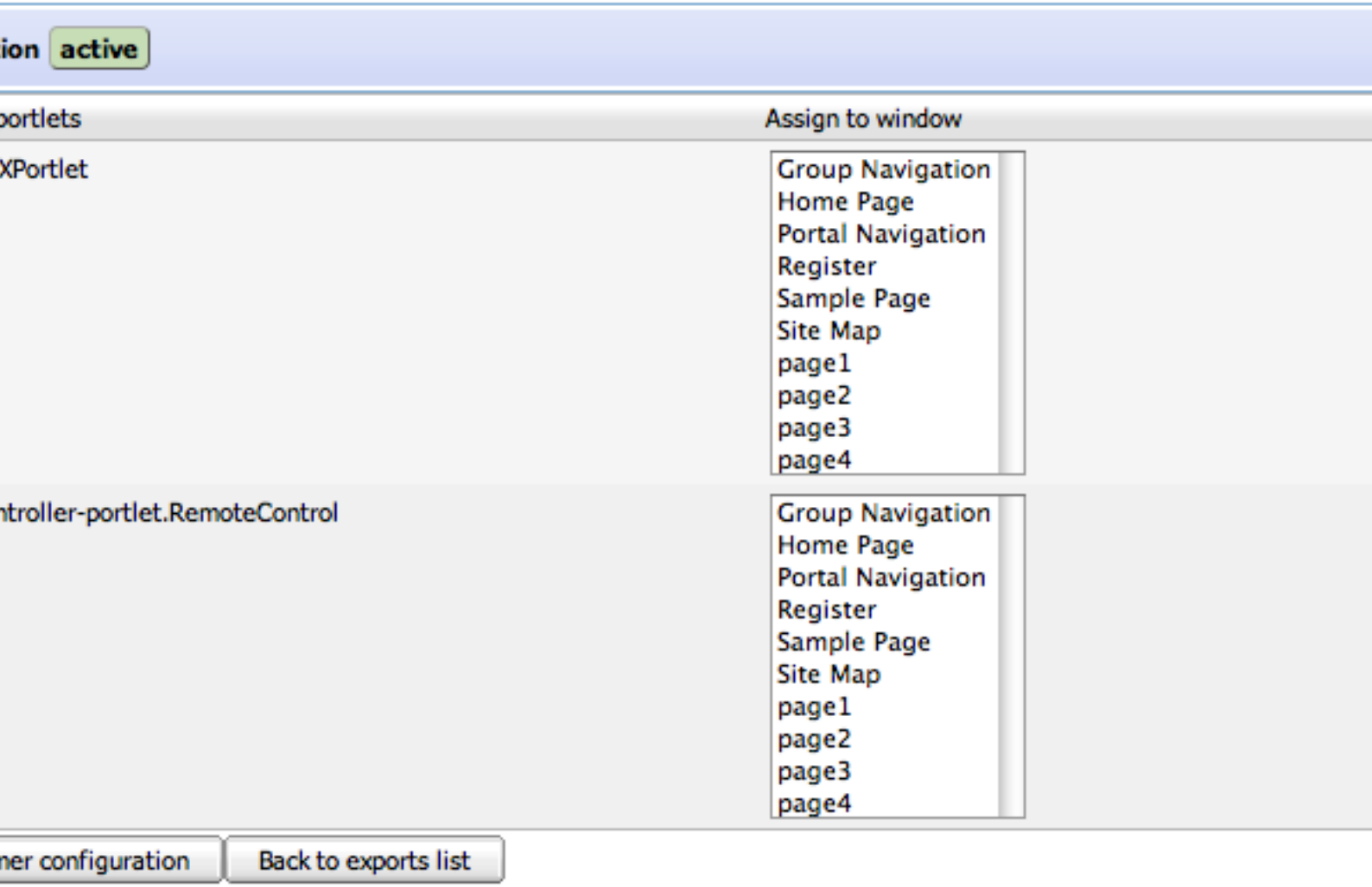


As you can see this screen presents the list of available exports with available operations for each.

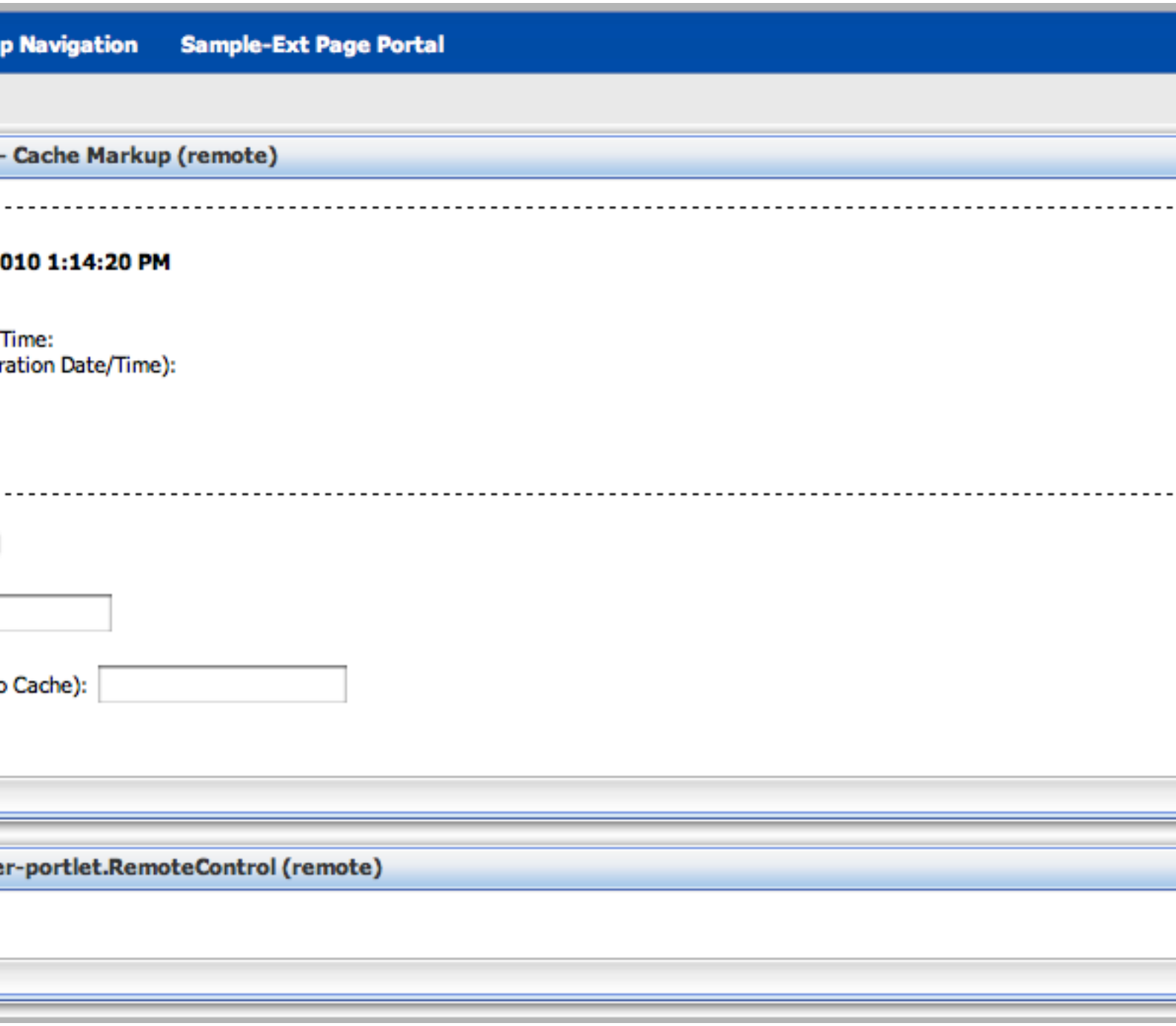
- View: displays the export details as previously seen when the export was first performed

- Delete: deletes the selected export, asking you for confirmation first
- Use for import: selects the export to import portlets from

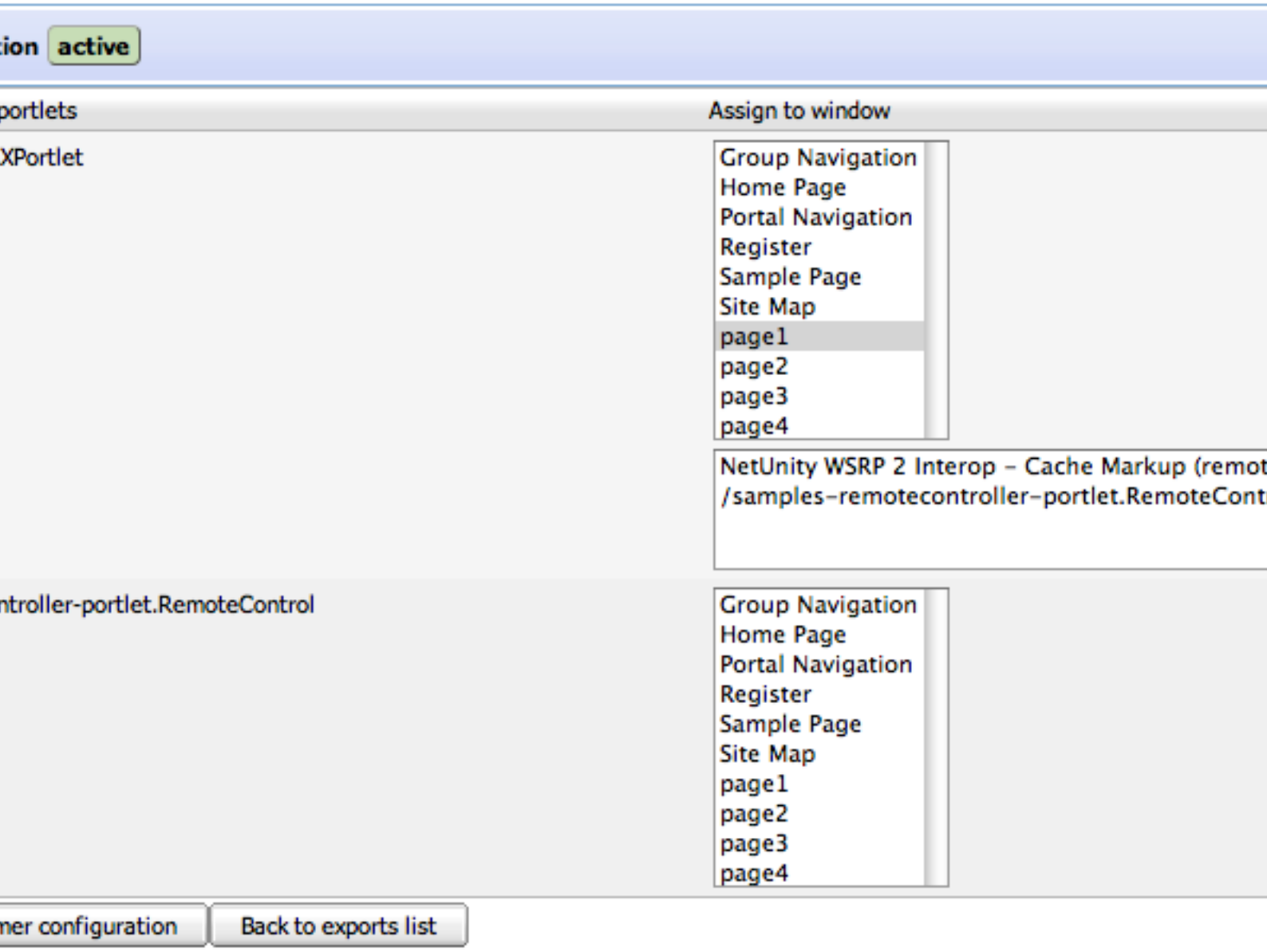
Once you've selected an export to import from, you will see a screen similar to the one below:



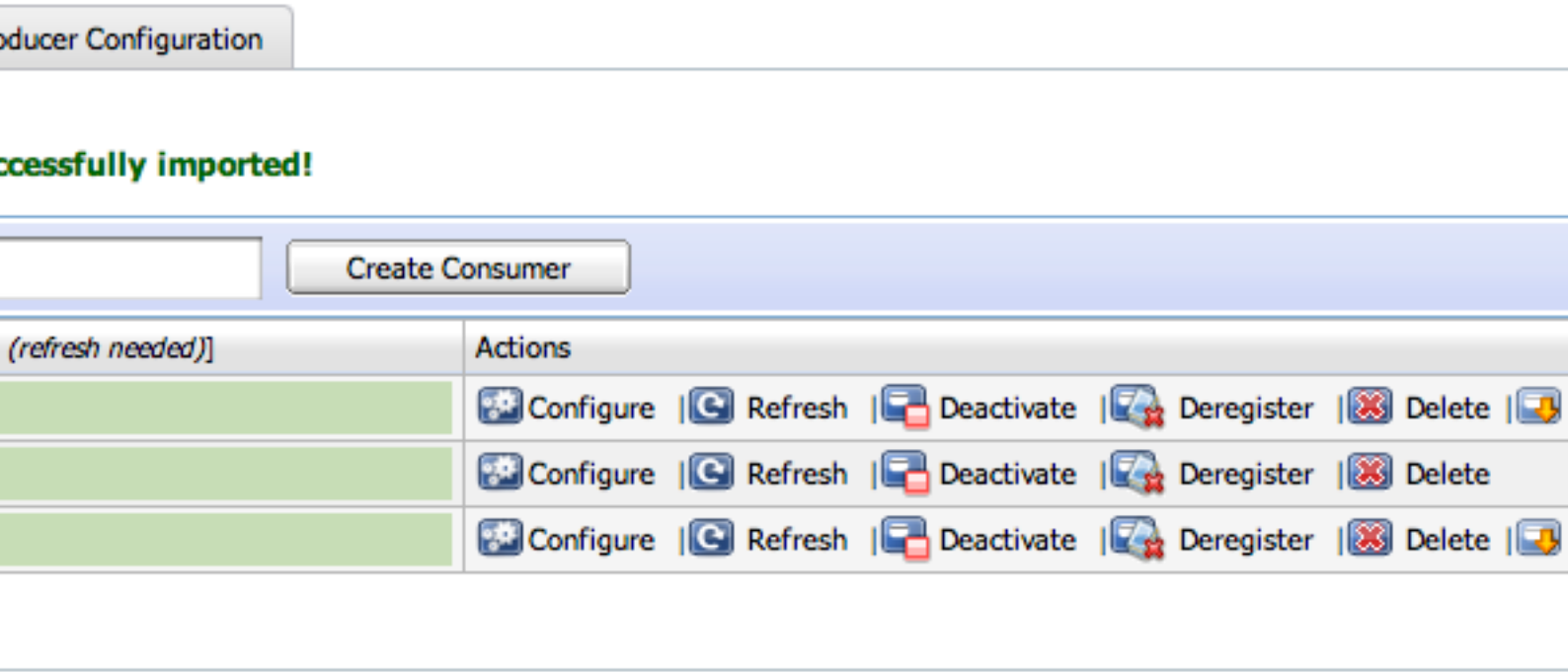
The screen displays the list of available exported portlets for the previously selected export. You can select which portlet you want to import by checking the checkbox next to its name. Next, you need to select the content of which window the imported portlet will replace. This process is done in three steps. Let's assume in this example that you have the following page called `page1` and containing two windows called `NetUnity WSRP 2 Interop - Cache Markup (remote)` and `/samples-remotecontroller-portlet.RemoteControl (remote)` as shown below:



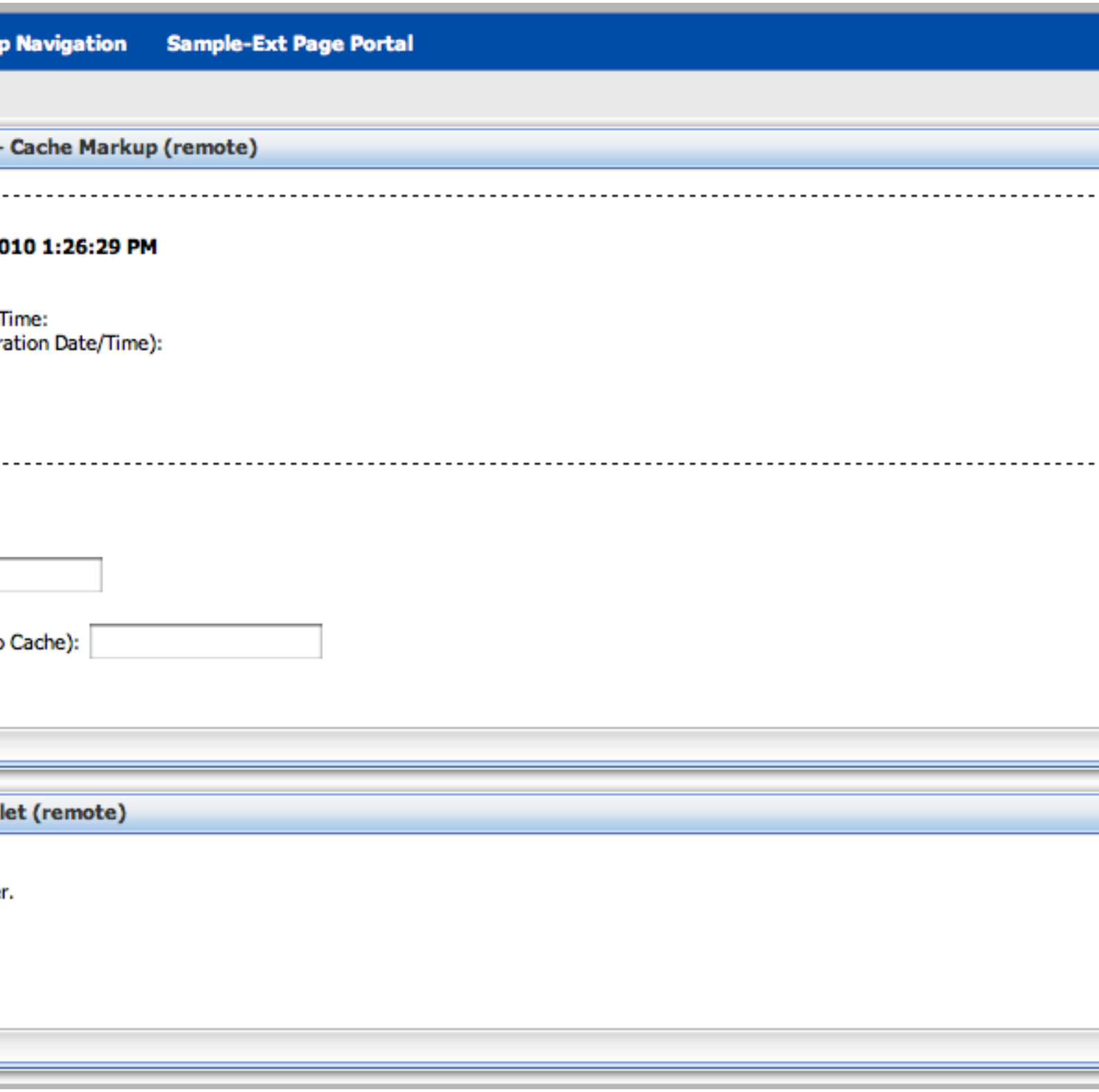
In this example, we want to replace the content of the `/samples-remotecontroller-portlet.RemoteControl (remote)` by the content of the `/ajaxPortlet.JSFAJAXPortlet` portlet that we previously exported. To do so, we will check the checkbox next to the `/ajaxPortlet.JSFAJAXPortlet` portlet name to indicate that we want to import its data and then select the `page1` in the list of available pages. The screen will then refresh to display the list of available windows on that page, similar to the one seen below:



Note that, at this point, we still need to select the window which content we want to replace before being able to complete the import operation. Let's select the `/samples-remotecontroller-portlet.RemoteControl (remote)` window, at which point the "Import" button will become enabled, indicating that we now have all the necessary data to perform the import. If all goes well, pressing that button should result in a screen similar to the one below:



If you now take a look at the `page1` page, you should now see that the content `/samples-remotecontroller-portlet.RemoteControl (remote)` window has been replaced by the content of the `/ajaxPortlet.JSFAJAXPortlet` imported portlet and the window renamed appropriately:

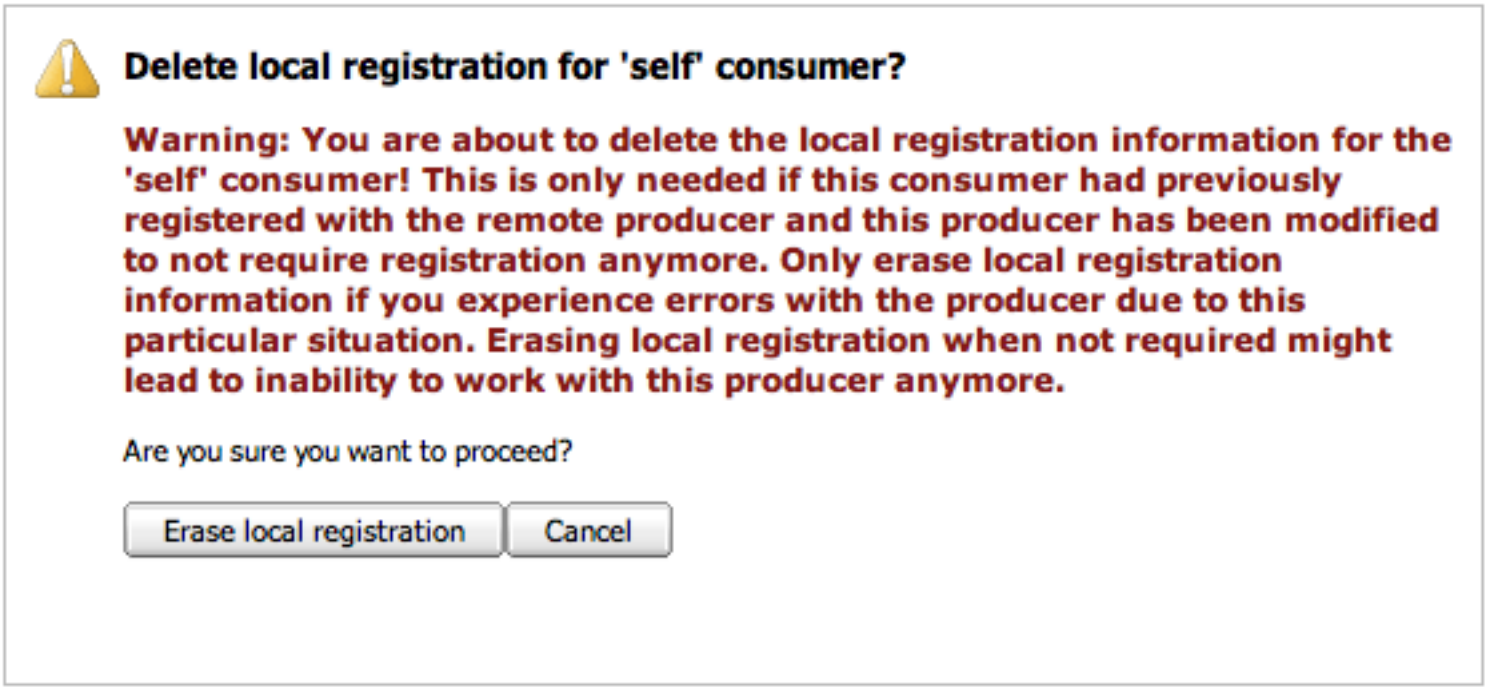


7.8.4. Erasing local registration data

There are rare cases where it might be required to erase the local information without being able to deregister first. This is the case when a consumer is registered with a producer that has been

modified by its administrator to not require registration anymore. If that ever was to happen (most likely, it won't), you can erase the local registration information from the consumer so that it can resume interacting with the remote producer. To do so, click on "Erase local registration" button next to the registration context information on the consumer configuration screen:

Warning: This operation is dangerous as it can result in inability to interact with the remote producer if invoked when not required. A warning screen will be displayed to give you a chance to change your mind:



7.9. Configuring GateIn's WSRP Producer

7.9.1. Overview

The preferred way to configure the behavior of Portal's WSRP Producer is via the WSRP configuration portlet. Alternatively, it is possible to add an XML file called `wsrp-producer-config.xml` in the `$JBOSS_PROFILE_HOME/conf/gatein/` directory. Several aspects can be modified with respects to whether registration is required for consumers to access the Producer's services.

Note

An XML Schema defining which elements are available to configure Consumers via XML can be found

in `$JBOSS_PROFILE_HOME/deploy/gatein-wsrp-integration.ear/lib/wsrp-integration-api-$WSRP_VERSION.jar/xsd/gatein_wsrp_producer_1_0.xsd`

Important

It is important to note that once the XML configuration file for the producer has been read upon the WSRP service first start, the associated information is put under control of JCR (Java Content Repository). Subsequent launches of the WSRP service will use the JCR-stored information and ignore the content of the XML configuration file.

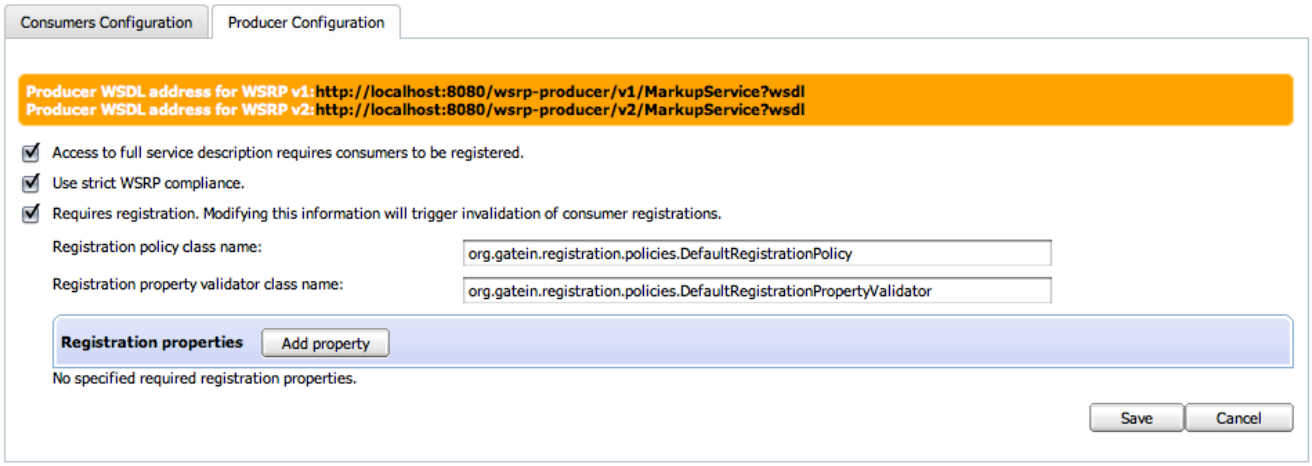
Note

The default configuration file for the producer can be found at `$JBOSS_PROFILE_HOME/deploy/gatein-wsrp-integration.ear/lib/extension-component-$WSRP_VERSION.jar/conf/wsrp-producer-config.xml`

7.9.2. Default configuration

The default producer configuration is to require that consumers register with it before providing access its services but does not require any specific registration properties (apart from what is mandated by the WSRP standard). It does, however, require consumers to be registered before sending them a full service description. This means that our WSRP producer will not provide the list of offered portlets and other capabilities to unregistered consumers. The producer also uses the default `RegistrationPolicy` paired with the default `RegistrationPropertyValidator`. We will look into property validators in greater detail later in*Section 7.9.3, “Registration configuration”*. Suffice to say for now that this allows users to customize how Portal's WSRP Producer decides whether a given registration property is valid or not.

GateIn provides a web interface to configure the producer's behavior. You can access it by clicking on the "Producer Configuration" tab of the "WSRP" page of the "admin" portal. Here's what you should see with the default configuration:

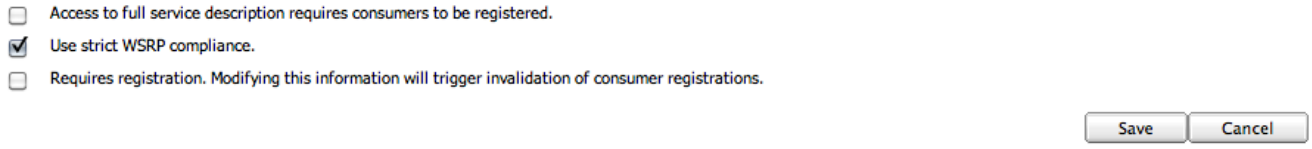


As would be expected, you can specify whether or not the producer will send the full service description to unregistered consumers, and, if it requires registration, which `RegistrationPolicy` to use (and, if needed, which `RegistrationPropertyValidator`), along with required registration property description for which consumers must provide acceptable values to successfully register.

New in GateIn 3.2, we now display the WSDL URLs to access GateIn's WSRP producer either in WSRP 1 or WSRP 2 mode.

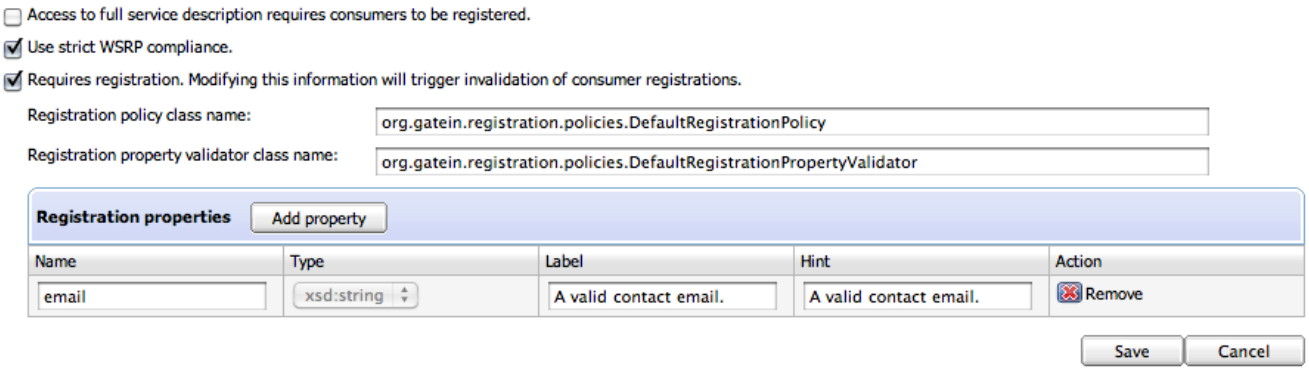
7.9.3. Registration configuration

In order to require consumers to register with Portal's producer before interacting with it, you need to configure Portal's behavior with respect to registration. Registration is optional, as are registration properties. The producer can require registration without requiring consumers to pass any registration properties as is the case in the default configuration. Let's configure our producer starting with a blank state:



We will allow unregistered consumers to see the list of offered portlets so we leave the first checkbox ("Access to full service description requires consumers to be registered.") unchecked. We will, however, specify that consumers will need to be registered to be able to interact with our producer. Check the second checkbox ("Requires registration. Modifying this information will trigger invalidation of consumer registrations."). The screen should now refresh and display:

You can specify the fully-qualified name for your `RegistrationPolicy` and `RegistrationPropertyValidator` there. We will keep the default value. See *Section 7.9.3.1, "Customization of Registration handling behavior"* for more details. Let's add, however, a registration property called `email`. Click "Add property" and enter the appropriate information in the fields, providing a description for the registration property that can be used by consumers to figure out its purpose:



Press "Save" to record your modifications.

Note

At this time, only String (xsd:string) properties are supported. If your application requires more complex properties, please let us know.

Note

If consumers are already registered with the producer, modifying the configuration of required registration information will trigger the invalidation of held registrations, requiring consumers to modify their registration before being able to access the producer again. We saw the consumer side of that process in *Section 7.8.1.2, "Registration modification on producer error"*.

7.9.3.1. Customization of Registration handling behavior

Registration handling behavior can be customized by users to suit their Producer needs. This is accomplished by providing an implementation of the `RegistrationPolicy` interface. This interface defines methods that are called by Portal's Registration service so that decisions can be made appropriately. A default registration policy that provides basic behavior is provided and should be enough for most user needs.

While the default registration policy provides default behavior for most registration-related aspects, there is still one aspect that requires configuration: whether a given value for a registration property is acceptable by the WSRP Producer. This is accomplished by plugging a

`RegistrationPropertyValidator` in the default registration policy. This allows users to define their own validation mechanism.

Please refer to the Javadoc™ for `org.gatein.registration.RegistrationPolicy` and `org.gatein.registration.policies.RegistrationPropertyValidator` for more details on what is expected of each method.

Defining a registration policy is required for the producer to be correctly configured. This is accomplished by specifying the qualified class name of the registration policy. Since we anticipate that most users will use the default registration policy, it is possible to provide the class name of your custom property validator instead to customize the default registration policy behavior. Note that property validators are only used by the default policy.

Note

Since the policy or the validator are defined via their class name and dynamically loaded, it is important that you make sure that the identified class is available to the application server. One way to accomplish that is to deploy your policy implementation as JAR file in your AS instance deploy directory. Note also that, since both policies and validators are dynamically instantiated, they must provide a default, no-argument constructor.

7.9.4. WSRP validation mode

The lack of conformance kit and the wording of the WSRP specification leaves room for differing interpretations, resulting in interoperability issues. It is therefore possible to encounter issues when using consumers from different vendors. We have experienced such issues and have introduced a way to relax the validation that our WSRP producer performs on the data provided by consumers to help with interoperability by accepting data that would normally be invalid. Note that we only relax our validation algorithm on aspects of the specification that are deemed harmless such as invalid language codes.

By default, the WSRP producer is configured in strict mode. If you experience issues with a given consumer, you might want to try to relax the validation mode. This is accomplished by unchecking the "Use strict WSRP compliance." checkbox on the Producer configuration screen.

Advanced Development

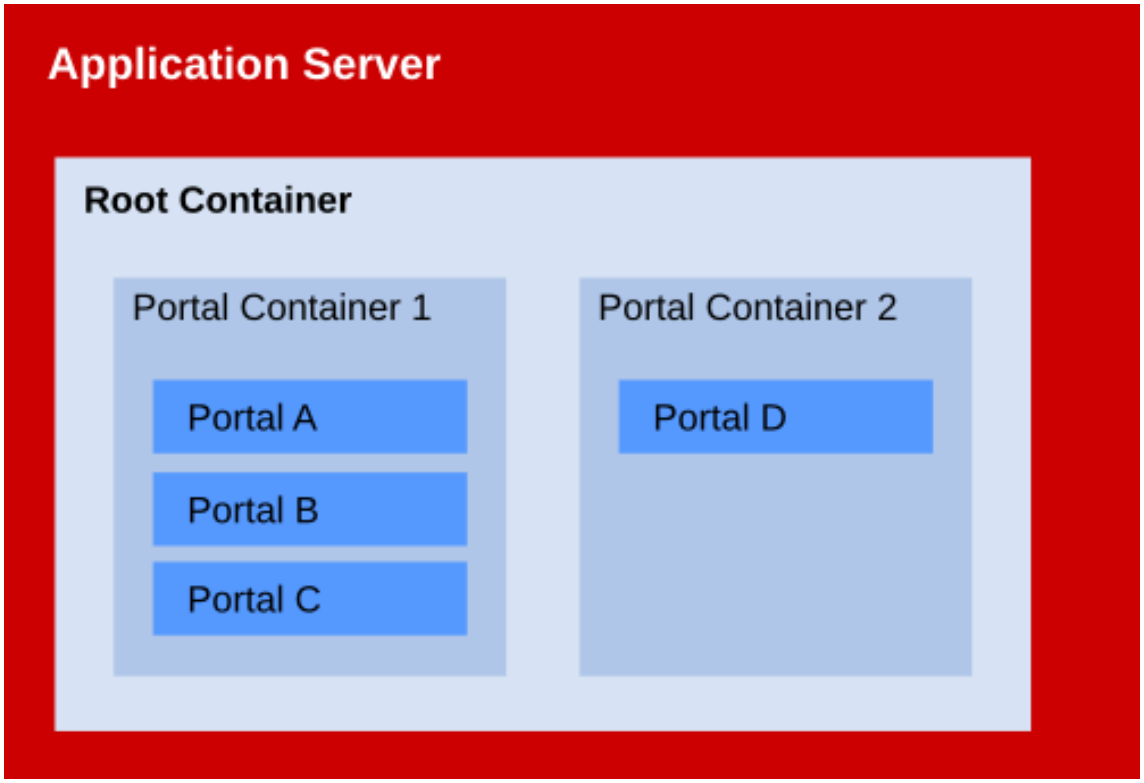
8.1. Foundations

8.1.1. GateIn Kernel

GateIn 3.2 is built as a set of services on top of a dependency injection kernel. The kernel provides configuration, lifecycle handling, component scopes, and some core services.

Service components exist in two scopes. First scope is represented by **RootContainer** - it contains services that exist independently of any portal, and can be accessed by all portals.

Second scope is portal-private in the form of **PortalContainer**. Each portal lives in an instance of PortalContainer. This scope contains services that are common for a set of portals, and services which should not be shared by all portals.



Whenever a specific service is looked up through PortalContainer, and the service is not available, the lookup is delegated further up to RootContainer. We can therefore have default instance of a certain component in RootContainer, and portal specific instances in some or all PortalContainers, that override the default instance.

Whenever your portal application has to be integrated more closely with GateIn services, the way to do it is by looking up these services through PortalContainer. Be careful though - only officially documented services should be accessed this way, and used according to documentation, as most of the services are an implementation detail of GateIn, and subject to change without notice.

8.1.2. Configuring services

GateIn Kernel uses dependency injection to create services based on **configuration.xml** configuration files. The location of the configuration files determines if services are placed into RootContainer scope, or into PortalContainer scope. All configuration.xml files located at **conf/configuration.xml** in the classpath (any directory, or any jar in the classpath) will have their services configured at RootContainer scope. All configuration.xml files located at **conf/portal/configuration.xml** in the classpath will have their services configured at PortalContainer scope. Additionally, **portal extensions** can contain configuration in **WEB-INF/conf/configuration.xml**, and will also have their services configured at PortalContainer scope.

Note

Portal extensions are described later on.

8.1.3. Configuration syntax

8.1.3.1. Components

A service component is defined in **configuration.xml** by using **<component>** element.

There is only one required information when defining a service - the service implementation class, specified using **<type>**

Every component has a **<key>** that identifies it. If not explicitly set, a key defaults to the value of <type>. If key can be loaded as a class, a Class object is used as a key, otherwise a String is used.

The usual approach is to specify an interface as a key.

Example 8.1. Example of service component configuration:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<configuration
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd
                  http://www.exoplaform.org/xml/ns/kernel_1_2.xsd"
    xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">
  <component>
    <key>org.exoplatform.services.database.HibernateService</key>
    <type>org.exoplatform.services.database.impl.HibernateServiceImpl</type>

    ...
```

```
  </component>
</configuration>
```

8.1.3.2. External Plugins

GateIn Kernel supports non-component objects that can be configured, instantiated, and injected into registered components, using method calls. The mechanism is called 'plugins', and allows portal extensions to add additional configurations to core services.

External plugin is defined by using **<external-component-plugins>** wrapper element which contains one or more **<component-plugin>** definitions. <external-component-plugins> uses **<target-component>** to specify a target service component that will receive injected objects.

Every <component-plugin> defines an implementation type, and a method on target component to use for injection (**<set-method>**).

A plugin implementation class has to implement **org.exoplatform.container.component.ComponentPlugin** interface.

In the following example **PortalContainerDefinitionPlugin** implements ComponentPlugin:

Example 8.2. PortalContainerDefinitionPlugin

```
<?xml version="1.0" encoding="UTF-8"?>
<configuration
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd
                  http://www.exoplaform.org/xml/ns/kernel_1_2.xsd"
    xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">

  <external-component-plugins>
          <target-component>org.exoplatform.container.definition.PortalContainerConfig</target-
component>
    <component-plugin>
      <!-- The name of the plugin -->
      <name>Add PortalContainer Definitions</name>

      <!-- The name of the method to call on the PortalContainerConfig
          in order to register the PortalContainerDefinitions -->
      <set-method>registerPlugin</set-method>

      <!-- The fully qualified name of the PortalContainerDefinitionPlugin -->
      <type>org.exoplatform.container.definition.PortalContainerDefinitionPlugin</type>
```

```
      ...

    </component-plugin>
  </external-component-plugins>
</configuration>
```

8.1.3.3. Includes, and special URLs

It is possible to break **configuration.xml** file into many smaller files, that are then included into a 'master' configuration file. The included files are complete configuration xml documents by themselves - they are not fragments of text.

An example configuration.xml that 'outsources' its content into several files:

```
<configuration xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd
                  http://www.exoplaform.org/xml/ns/kernel_1_2.xsd"
    xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">

  <import>war:/conf/sample-ext/jcr/jcr-configuration.xml</import>
  <import>war:/conf/sample-ext/portal/portal-configuration.xml</import>

</configuration>
```

We see a special URL being used to reference another configuration file. URL schema **'war:'** means, that the path that follows is resolved relative to current PortalContainer's servlet context resource path, starting at **WEB-INF** as a root.

Note

Current PortalContainer is really a newly created PortalContainer, as war: URLs only make sense for PortalContainer scoped configuration.

Also, thanks to extension mechanism, the servlet context used for resource loading is a **unified servlet context** (as explaned in a later section).

To have include path resolved relative to current classpath (context classloader), use **'jar:'** URL schema.

8.1.3.4. Special variables

Configuration files may contain a **special variable** reference *${container.name.suffix}*. This variable resolves to the name of the current portal container, prefixed by underscore (_). This facilitates reuse of configuration files in situations where portal specific unique names need to be assigned to some resources (i.e. JNDI names, Database / DataSource names, JCR repository names, etc ...).

This variable is only defined when there is a current PortalContainer available - only for PortalContainer scoped services.

A good example for this is **HibernateService**:

Example 8.3. HibernateService using variables

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<configuration
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd
                http://www.exoplaform.org/xml/ns/kernel_1_2.xsd"
  xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">

  <component>
    <key>org.exoplatform.services.database.HibernateService</key>
    <jmx-name>database:type=HibernateService</jmx-name>
    <type>org.exoplatform.services.database.impl.HibernateServiceImpl</type>
    <init-params>
      <properties-param>
        <name>hibernate.properties</name>
        <description>Default Hibernate Service</description>
        <property name="hibernate.show_sql" value="false" />
        <property name="hibernate.cglib.use_reflection_optimizer" value="true" />
        <property name="hibernate.connection.url"
                  value="jdbc:hsqldb:file:../temp/data/exodb${container.name.suffix}" />
        <property name="hibernate.connection.driver_class" value="org.hsqldb.jdbcDriver" />
        <property name="hibernate.connection.autocommit" value="true" />
        <property name="hibernate.connection.username" value="sa" />
        <property name="hibernate.connection.password" value="" />
        <property name="hibernate.dialect" value="org.hibernate.dialect.HSQLDialect" />
        <property name="hibernate.c3p0.min_size" value="5" />
        <property name="hibernate.c3p0.max_size" value="20" />
        <property name="hibernate.c3p0.timeout" value="1800" />
        <property name="hibernate.c3p0.max_statements" value="50" />
      </properties-param>
```

```
    </init-params>
  </component>
</configuration>
```

8.1.4. InitParams configuration object

`InitParams` is a configuration object that is essentially a map of key-value pairs, where key is always a `String`, and value can be any type that can be described using kernel configuration xml.

Service components that form the GateIn 3.2 insfrastructure use `InitParams` object to configure themselves. A component can have one instance of InitParams injected at most. If the service component's constructor takes InitParams as any of the parameters it will automatically be injected at component instantiation time. The xml configuration for a service component that expects InitParams object must include <init-params> element (even if an empty one).

Let's use an example to see how the kernel xml configuration syntax looks for creating `InitParams` instances.

Example 8.4. InitParams - properties-param

```
<component>
  <key>org.exoplatform.services.naming.InitialContextInitializer</key>
  <type>org.exoplatform.services.naming.InitialContextInitializer</type>
  <init-params>
    <properties-param>
      <name>default-properties</name>
      <description>Default initial context properties</description>
      <property name="java.naming.factory.initial"
            value="org.exoplatform.services.naming.SimpleContextFactory" />
    </properties-param>
  </init-params>
</component>
```

InitParams object description begins with <init-params> element. It can have zero or more children elements each of which is one of <value-param>, <values-param>, <properties-param>, or <object-param>. Each of these child elements takes a <name> that serves as a map entry key, and an optional <description>. It also takes a type-specific value specification.

For <properties-param> the value specification is in the form of one or more <property> elements, each of which specifies two strings - a property name, and a property value. Each <properties-

params> defines one `java.util.Properties` instance. Also see *Example 8.3, "HibernateService using variables"* for an example.

Example 8.5. InitParams - value-param

```
<component>
  <key>org.exoplatform.services.transaction.TransactionService</key>
  <type>org.exoplatform.services.transaction.impl.jotm.TransactionServiceJotmImpl</type>
  <init-params>
    <value-param>
      <name>timeout</name>
      <value>5</value>
    </value-param>
  </init-params>
</component>
```

For <value-param> the value specification is in the form of <value> element, which defines one `String` instance.

Example 8.6. InitParams - values-param

```
<component>
 <key>org.exoplatform.services.resources.ResourceBundleService</key>
 <type>org.exoplatform.services.resources.impl.SimpleResourceBundleService</type>
  <init-params>
    <values-param>
      <name>classpath.resources</name>
                                                    <description>The          resources
 that start with the following package name should be load from file system</description>
      <value>locale.portlet</value>
    </values-param>

    <values-param>
      <name>init.resources</name>
      <description>Store the following resources into the db for  the first launch </description>
      <value>locale.test.resources.test</value>
    </values-param>

    <values-param>
      <name>portal.resource.names</name>
```

```
      <description>The properties files of  the portal ,  those file will be merged
        into one ResourceBundle properties </description>
      <value>local.portal.portal</value>
      <value>local.portal.custom</value>
    </values-param>
  </init-params>
</component>
```

For <values-param> the value specification is in the form of one or more <value> elements, each of which represents one `String` instance, where all the `String` values are then collected into a `java.util.List` instance.

Example 8.7. InitParams - object-param

```
<component>
  <key>org.exoplatform.services.cache.CacheService</key>
  <jmx-name>cache:type=CacheService</jmx-name>
  <type>org.exoplatform.services.cache.impl.CacheServiceImpl</type>
  <init-params>
    <object-param>
      <name>cache.config.default</name>
      <description>The default cache configuration</description>
      <object type="org.exoplatform.services.cache.ExoCacheConfig">
        <field name="name">
          <string>default</string>
        </field>
        <field name="maxSize">
          <int>300</int>
        </field>
        <field name="liveTime">
          <long>300</long>
        </field>
        <field name="distributed">
          <boolean>false</boolean>
        </field>
        <field name="implementation">
          <string>org.exoplatform.services.cache.concurrent.ConcurrentFIFOExoCache</string>
        </field>
      </object>
    </object-param>
  </init-params>
```

```
</component>
```

For <object-param> in our case, the value specification comes in a form of <object> element, which is used for POJO style object specification (you specify an implementation class - <type>, and property values - <field>).

Also see *Example 8.8, "Portal container declaration example"* for an example of specifying a field of `Collection` type.

The `InitParams` structure - the names and types of entries is specific for each service, as it is the code inside service components's class that decides what entry names to look up and what types it expects to find.

8.1.5. Configuring a portal container

A **portal container** is defined by several attributes.

First, there is a **portal container name**, which is always equal to URL context to which the current portal is bound.

Second, there is a **REST context name**, which is used for REST access to portal application - every portal has exactly one (unique) REST context name.

Then, there is a **realm name** which is the name of security realm used for authentication when users log into the portal.

Finally, there is a list of **Dependencies** - other web applications, whose resources are visible to current portal (via extension mechanism described later), and are searched in the specified order.

Example 8.8. Portal container declaration example

```
<?xml version="1.0" encoding="UTF-8"?>
<configuration
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd
                      http://www.exoplaform.org/xml/ns/kernel_1_2.xsd"
  xmlns="http://www.exoplaform.org/xml/ns/kernel_1_2.xsd">

  <external-component-plugins>
    <!-- The full qualified name of the PortalContainerConfig -->
          <target-component>org.exoplatform.container.definition.PortalContainerConfig</target-
component>

    <component-plugin>
```

```
<!-- The name of the plugin -->
<name>Add PortalContainer Definitions</name>

<!-- The name of the method to call on the PortalContainerConfig
     in order to register the PortalContainerDefinitions -->
<set-method>registerPlugin</set-method>

<!-- The full qualified name of the PortalContainerDefinitionPlugin -->
<type>org.exoplatform.container.definition.PortalContainerDefinitionPlugin</type>

<init-params>
  <object-param>
    <name>portal</name>
    <object type="org.exoplatform.container.definition.PortalContainerDefinition">
      <!-- The name of the portal container -->
      <field name="name"><string>portal</string></field>

      <!-- The name of the context name of the rest web application -->
      <field name="restContextName"><string>rest</string></field>

      <!-- The name of the realm -->
      <field name="realmName"><string>exo-domain</string></field>

      <!-- All the dependencies of the portal container ordered by loading priority -->
      <field name="dependencies">
        <collection type="java.util.ArrayList">
          <value>
            <string>eXoResources</string>
          </value>
          <value>
            <string>portal</string>
          </value>
          <value>
            <string>dashboard</string>
          </value>
          <value>
            <string>exoadmin</string>
          </value>
          <value>
            <string>eXoGadgets</string>
          </value>
          <value>
            <string>eXoGadgetServer</string>
          </value>
```

```
            <value>
              <string>rest</string>
            </value>
            <value>
              <string>web</string>
            </value>
            <value>
              <string>wsrp-producer</string>
            </value>
            <!-- The sample-ext has been added at the end of the dependency list
                 in order to have the highest priority -->
            <value>
              <string>sample-ext</string>
            </value>
          </collection>
        </field>
      </object>
    </object-param>
  </init-params>
 </component-plugin>
</external-component-plugins>
</configuration>
```

Note

Dependencies are part of the extension mechanism.

Every **portal container** is represented by a **PortalContainer instance**, which contains:

- associated **ExoContainerContext**, which contains information about the portal
- **unified servlet context**, for web-archive-relative resource loading
- **unified classloader**, for classpath based resource loading
- methods for retrieving services

Unified servlet context, and **unified classloader** are part of the **extension mechanism** (explained in next section), and provide standard API (ServletContext, ClassLoader) with specific resource loading behavior - visibility into associated web application archives, configured with Dependencies property of PortalContainerDefinition. Resources from other web applications are queried in the order specified by Dependencies. The later entries in the list override the previous ones.

8.1.6. GateIn Extension Mechanism, and Portal Extensions

Extension mechanism is a functionality that makes it possible to override portal resources in an almost plug-and-play fashion - just drop in a .war archive with the resources, and configure its position on the portal's classpath. This way any customizations of the portal don't have to involve unpacking and repacking the original portal .war archives. Instead, you create your own .war archive with changed resources, that override the resources in the original archive.

A web archive packaged in a way to be used through extension mechanism is called **portal extension**.

There are two steps necessary to create a portal extension.

First, declare **PortalConfigOwner** servlet context listener in web.xml of your web application.

Example 8.9. Example of a portal extension called sample-ext:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<!DOCTYPE web-app PUBLIC -//Sun Microsystems, Inc.//DTD Web Application 2.3//EN
    http://java.sun.com/dtd/web-app_2_3.dtd>
<web-app>

  <display-name>sample-ext</display-name>

  <listener>
    <listener-class>org.exoplatform.container.web.PortalContainerConfigOwner</listener-class>
  </listener>

  ...

</web-app>
```

Then, add the servlet context name of this web application in proper place in the list of Dependencies of the PortalContainerDefinition of all the portal containers that you want to have access to its resources.

After this step your web archive will be on portal's unified classpath, and unified servlet context resource path. The later in the Dependencies list your application is, the higher priority it has when resources are loaded by portal.

Note

See 'Configuring a portal' section for example of PortalContainerDefinition, that has sample-ext at the end of its list of Dependencies.

8.1.7. Running Multiple Portals

It is possible to run several independent portal containers - each bound to a different URL context - within the same JVM instance. This kind of setup is very efficient from administration and resource consumption aspect. The most elegant way to **reuse** configuration for different coexisting portals is by way of extension mechanism - by **inheriting** resources and configuration from existing web archives, and just **adding** extra resources to it, and **overriding** those that need to be changed by including modified copies.

In order for a portal application to correctly function when deployed in multiple portals, the application may have to dynamically query the information about the current portal container. The application should not make any assumptions about the name, and other information of the current portal, as there are now multiple different portals in play.

At any point during request processing, or lifecycle event processing, your application can retrieve this information through **org.exoplatform.container. ExoContainerContext**. Sometimes your application needs to make sure that the proper **PortalContainer** - the source of **ExoContainerContext** - is associated with the current call.

If you ship servlets or servlet filters as part of your portal application, and if you need to access portal specific resources at any time during the processing of the servlet or filter request, then you need to make sure the servlet/filter is associated with the current container.

The proper way to do that is to make your servlet extend **org.exoplatform.container.web. AbstractHttpServlet** class. This will not only properly initialize current **PortalContainer** for you, but will also set the current thread's context classloader to one that looks for resources in associated web applications in the order specified by **Dependencies** configuration (as explained in Extension mechanism section).

Similarly for filters, make sure your filter class extends **org.exoplatform.container.web. AbstractFilter**. Both **AbstractHttpServlet**, and **AbstractFilter** have a method **getContainer()**, which returns the current **PortalContainer**. If your servlet handles the requests by implementing a **service()** method, you need to rename that method to match the following signature:

```
/**
 * Use this method instead of Servlet.service()
 */
protected void onService(ExoContainer container, HttpServletRequest req,
    HttpServletResponse res) throws ServletException, IOException;
```

Note

The reason is that AbstractHttpServlet implements service() to perform its interception, and you don't want to overwrite (by overriding) this functionality.

You may also need to access portal information within your **HttpSessionListener**. Again, make sure to extend the provided abstract class - **org.exoplatform.container.web.AbstractHttpSessionListener**. Also, modify your method signatures as follows:

```
/**
 * Use this method instead of HttpSessionListener.sessionCreated()
 */
protected void onSessionCreated(ExoContainer container, HttpSessionEvent event);

/**
 * Use this method instead of HttpSessionListener.sessionDestroyed()
 */
protected void onSessionDestroyed(ExoContainer container, HttpSessionEvent event);
```

There is another method you have to implement in this case:

```
/**
 * Method should return true if unified servlet context,
 * and unified classloader should be made available
 */
protected boolean requirePortalEnvironment();
```

If this method returns true, current thread's context classloader is set up according to **Dependencies** configuration, and availability of the associated web applications. If it returns false, the standard application separation rules are used for resource loading (effectively turning off the extension mechanism). This method exists on **AbstractHttpServlet** and **AbstractFilter** as well, where there is a default implementation that automatically returns true, when it detects there is a current PortalContainer present, otherwise it returns false.

We still have to explain how to properly perform **ServletContextListener** based initialization, when you need access to current PortalContainer.

GateIn has no direct control over the deployment of application archives (.war, .ear files) - it is the application server that performs the deployment. For **extension mechanism** to work properly, the applications, associated with the portal via **Dependencies** configuration, have to be deployed before the portal, that depends on them, is initialized. On the other hand, these applications may require an already initialized PortalContainer to properly initialize themselves - we have a recursive dependency problem. To resolve this problem, a mechanism of **initialization tasks**, and **task queues**, was put in place. Web applications that depend on current PortalContainer for their initialization have to avoid performing their initialization directly in some ServletContextListener executed during their deployment (before any PortalContainer was initialized). Instead, a web application should package its initialization logic into an init task of appropriate type, and only use ServletContextListener to insert the init task instance into the proper init tasks queue.

An example of this is Gadgets application which registers Google gadgets with the current PortalContainer:

```
public class GadgetRegister implements ServletContextListener
{
  public void contextInitialized(ServletContextEvent event)
  {
    // Create a new post-init task
    final PortalContainerPostInitTask task = new PortalContainerPostInitTask() {

      public void execute(ServletContext context, PortalContainer portalContainer)
      {
        try
        {
          SourceStorage sourceStorage =
         (SourceStorage) portalContainer.getComponentInstanceOfType(SourceStorage.class);
          ...
        }
        catch (RuntimeException e)
        {
          throw e;
        }
        catch (Exception e)
        {
          throw new RuntimeException("Initialization failed: ", e);
        }
      }
    };
```

```
    // Add post-init task for execution on all the portal containers
    // that depend on the given ServletContext according to
    // PortalContainerDefinitions (via Dependencies configuration)
    PortalContainer.addInitTask(event.getServletContext(), task);
  }
}
```

The above example uses **PortalContainerPostInitTask**, which gets executed after the portal container has been initialized. In some situations you may want to execute initialization after portal container was instantiated, but before it was initialized - use **PortalContainerPreInitTask** in that case. Or, you may want to execute initialization after all the post-init tasks have been executed - use **PortalContainerPostCreateTask** in that case.

One more area that may need your attention are **LoginModules**. If you use custom LoginModules, that require current ExoContainer, make sure they extend **org.exoplatform.services.security.jaas.AbstractLoginModule** for proper initialization. AbstractLoginModule also takes care of the basic configuration - it recognizes two initialization options - **portalContainerName**, and **realmName** whose values you can access via protected fields of the same name.