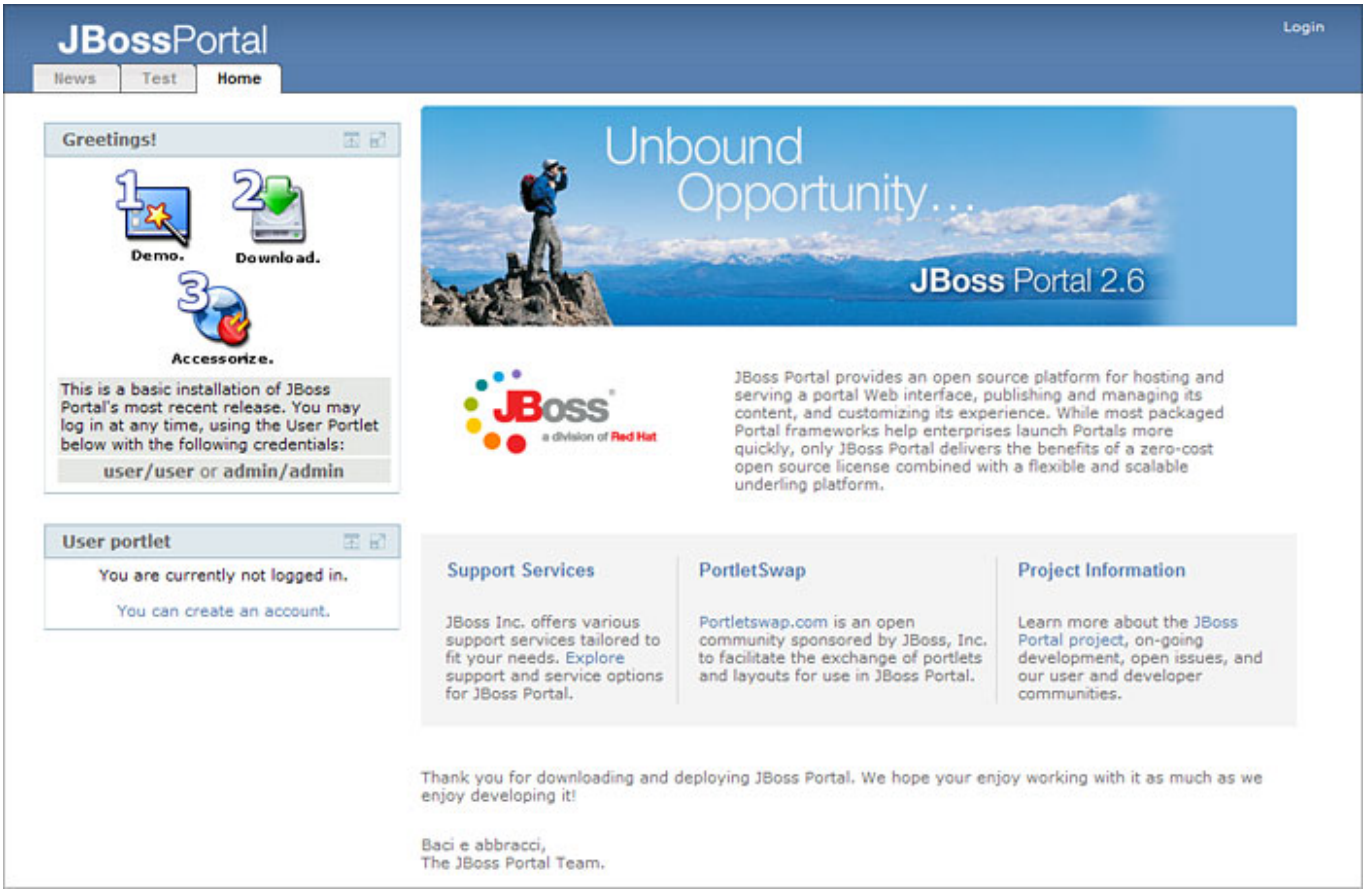
# JBoss Portal 2.6.1-CR1

## Reference Guide

Release 2.6.1-CR1 "Ninja"

# Table of Contents

# JBoss Portal - Overview




Many IT organizations look to achieve a competitive advantage for the enterprise by improving business productivity and reducing costs. Today's top enterprises are realizing this goal by deploying enterprise portals within their IT infrastructure. Enterprise portals simplify access to information by providing a single source of interaction with corporate information. Although today's packaged portal frameworks help enterprises launch portals more quickly, only JBoss Portal can deliver the benefits of a zero-cost open source license, combined with a flexible and scalable underlying platform.

JBoss Portal provides an open source and standards-based environment for hosting and serving a portal's Web interface, publishing and managing its content, and customizing its experience. It is entirely standards-based and supports the JSR-168 portlet specification, which allows you to easily plug-in standards-compliant portlets to meet your specific portal needs. JBoss Portal is available through the business-friendly LGPL [1] open source license and is supported by Red Hat Middleware, LLC Professional Support and Consulting [2] . JBoss support services are available to assist you in designing, developing, deploying, and ultimately managing your portal environment. JBoss Portal is currently developed by Red Hat Middleware, LLC developers and community contributors.

The JBoss Portal framework and architecture includes the portal container and supports a wide range of features including standard portlets, single sign-on, clustering and internationalization. Portal themes and layouts are configurable. Fine-grained security administration down to portlet permissions rounds out the security model. JBoss

[1] http://www.jboss.com/company/aboutopensource
[2] http://www.jboss.com/services/index

Portal includes a rich content management system and message board support.

**JBoss Portal Resources:**

1. JBoss Portal Home Page [3]
2. Forums: User [4] | Developer [5] | WSRP [6] | Eclipse Portlet Plugin [7]
3. Wiki [8]
4. PortletSwap.com portlet exchange [9]
5. Our Roadmap [10]

The JBoss Portal team encourages you to use this guide to install and configure JBoss Portal. If you encounter any configuration issues or simply want to take part in our community, we would love to hear from you in our forums.

[3] http://www.jboss.org/products/jbossportal
[4] http://www.jboss.org/index.html?module=bb&op=viewforum&f=215
[5] http://www.jboss.org/index.html?module=bb&op=viewforum&f=205
[6] http://jboss.org/index.html?module=bb&op=viewforum&f=232
[7] http://jboss.org/index.html?module=bb&op=viewforum&f=239
[8] http://www.jboss.com/wiki/Wiki.jsp?page=JBossPortal
[9] http://www.portletswap.com
[10] http://jira.jboss.com/jira/browse/JBPORTAL?report=com.atlassian.jira.plugin.system.project:roadmap-panel

# Feature List

The following list details features found in this document's related release. For a technical view of our features, view the Project Roadmap and Task List [1] .

**Technology and Architecture**

- **JEMS:** Leverages the power of JBoss Enterprise Middleware Services : JBoss Application Server, JBoss Cache, JGroups, and Hibernate.
- **DB Agnostic:** Will work with any RDBMS supported by Hibernate
- **SSO/LDAP:** Leverages Tomcat and JBoss single sign on (SSO) solutions. Identity mapping framework adaptable to the enterprise LDAP deployments.
- **JAAS Authentication:** Custom authentication via JAAS login modules.
- **Cacheing:** Utilizes render-view caching for improved performance.
- **Clusterable:** Cluster support allows for portal state to be clustered for all portal instances.
- **Hot-Deployment:** Leverages JBoss dynamic auto deployment features.
- **SAR Installer:** Browser-based installer makes installation and initial configuration a breeze.

**Supported Standards**

- **Portlet Specification and API 1.0 (JSR-168)**
- **Content Repository for Java Technology API (JSR-170)**
- **Java Server Faces 1.2 (JSR-252)**
- **Java Management Extension (JMX) 1.2**
- **Web Services for Remote Portlets (WSRP) 1.0** See WSRP support in Portal [2] for more details.
- **Full J2EE 1.4 compliance when used with JBoss AS**

**Portal and Portal Container**

- **Multiple Portal Instances:** Ability to have multiple Portal instances running inside of one Portal container.
- **IPC** Inter-Portlet Communication API enables portlets to create links to other objects such as a page, portal or window .
- **Dynamicity** The ability for administrators and users to create and destroy objects such as portlets, pages,

[1] http://jira.jboss.com/jira/browse/JBPORTAL

[2] http://docs.jboss.com/jbportal/v2.6/reference-guide/en/html/wsrp.html#wsrp_support

portals, themes, and layouts at runtime.

- **Internationalization:** Ability to use internationalization resource files for every portlet.
- **Pluggable services:** Authentication performed by the servlet container and JAAS make it possible to swap the authentication scheme.
- **Page-based Architecture:** Allows for the grouping/division of portlets on a per-page basis.
- **Existing Framework support:** Portlets utilizing Struts, Spring MVC, Sun JSF-RI, AJAX, or MyFaces are supported.

**Themes and Layouts**

- **Easily swappable themes/layouts:** New themes and layouts containing images can be deployed in WAR archives.
- **Flexible API:** Theme and Layout API are designed to separate the business layer from the presentation layer.
- **Per-page layout strategy:** Different layouts can be assigned to different pages.

**User and Group Functionality**

- **User registration/validation:** Configurable registration parameters allow for user email validation before activation.
- **User login:** Makes use of servlet container authentication.
- **Create/Edit Users:** Ability for administrators to create/edit user profiles.
- **Create/Edit Roles:** Ability for administrators create/edit roles.
- **Role Assignment:** Ability for administrators to assign users to roles.

**Permissions Management**

- **Extendable permissions API:** Allows custom portlets permissions based on role definition.
- **Administrative interface:** Allows for permissions assignments to roles at any time for any deployed portlet, page, or portal instance.

**Content Management System**

- **JCR-compliant:** The CMS is powered by Apache Jackrabbit, an open source implementation of the Java Content Repository API.
- **DB or Filesystem store support:** Configurable content store to either a filesystem or RDBMS.
- **External Blob Support:** Configurable content store allowing large blobs to reside on filesystem and content node references/properties to reside in RDBMS.

- **Versioning support:** All content edited/created is autoversioned with a history of edits that can be viewed at any time.
- **Content Serving Search-engine-friendly URLS:** http://yourdomain/portal/content/index.html (Does not apply to portlet actions.)
- **No long portal URLS:** Serve binaries with simple urls. (http://domain/files/products.pdf)
- **Multiple HTML Portlet instance support:** Allows for extra instances of static content from the CMS to be served under separate windows.
- **Directory Support:** create, move, delete, copy, and upload entire directory trees.
- **File Functions:** create, move, copy, upload, and delete files.
- **Embedded directory-browser:** When copying, moving, deleting, or creating files, administrators can simply navigate the directory tree to find the collection they want to perform the action on.
- **Ease-of-use architecture:** All actions to be performed on files and folder are one mouse-click away.
- **Full-featured HTML editor:** HTML Editor contains WYSIWYG mode, preview functionality, and HTML source editting mode. HTML commands support tables, fonts, zooming, image and url linking, flash movie support, bulleted and numbered list, and dozens more.
- **Editor style-sheet support:** WYSIWYG editor displays current Portal style-sheet, for easy choosing of classes.
- **Internationalization Support:** Content can be attributed to a specific locale and then served to the user based on his/her browser settings.
- **Workflow Support:** Basic submit for review and approval process.

# Target Audience

Portlet developers, Portal administrators, and those wishing to implement/extend the JBoss Portal framework.

For end-user documentation, please download our User Guide from our documentation page [1] .

[1] http://labs.jboss.com/portal/jbossportal/docs/index.html

# Acknowledgements

We would like to thank the developers that participate in the JBoss Portal project effort.

Specifically,

- Antoine Herzog for his feedback, for writing Wikis and helping in the forums.
- Mark Fernandes and Paul Tamaro from Novell, for their hard work in supplying the portal project with usable and attractive themes and layouts in the 2.4 version of JBoss Portal.
- Martin Holzner from Novell, for his work on themes in the 2.4 version of JBoss Portal.
- Kev "kevs3d" Roast for supplying us with two working portlets that integrate existing frameworks in to the portal: Sun JSF-RI and Spring MVC Portlet.
- Swarn "sdhaliwal" Dhaliwal for supplying us with the Struts-Bridge, that will allow for existing struts applications to work with the Portal.
- A few Red Hat employees, Remy Maucherat for Tomcat configuration, Magesh Kumar Bojan and Martin Putz always there to help our customers, Prabhat Jha for making sure that JBoss Portal runs great everywhere. Noel Rocher for his early feedback on JBoss Portal 2.6 and contributions. James Cobb for the Renaissance theme.
- The JBoss Labs (http://www.JBoss.org) team for building a great infrastructure on top of JBoss Portal 2.6, providing very useful feedback and giving us the initial Drag and Drop implementation.
- Everyone participating in the forums and Wiki in general.

Contributions of any kind are always welcome, you can contribute by providing ideas, filling bug reports, producing some code, designing a theme, writing some documentation, etc... If you think your name is missing from this page, please let us know.

# 1

# System Requirements

**Thomas Heute** <theute@jboss.org>

**Roy Russo** <roy@jboss.org>

A list of tested versions or reported as working by users, before reporting a problem please make sure that you are using a compatible version.

If you successfully installed JBoss Portal on versions not listed here please let us know so we can add it here.

## 1.1. Minimum System Requirements

- JDK 1.4 or JDK 5 (JDK 6 is not part of the test platform)
- 512 MB RAM
- 100 MB hard disk space
- 400 MHz CPU

## 1.2. Supported Operating Systems

JBoss Portal is 100% pure Java and therefore interoperable with most operating systems capable of running a Java Virtual Machine (JVM); including Linux, Windows, UNIX, MacOS X.

## 1.3. JBoss Application Server

As of today JBoss Portal only works with JBoss Application Server.

JBoss AS 4.0.5.GA and JBoss AS 4.2.0.GA are supported.

### Warning

Versions before 4.0.4 of JBoss Application Server are not supported with this version of JBoss Portal.

## 1.4. Database

JBoss Portal is Database-Agnostic.

### Note

JBoss Portal employs Hibernate as an interface to RDBMS. Most RDBMS supported by Hibernate will work with JBoss Portal.

The following list, outlines known-to-be-working database vendor and version combinations:

- MySQL 4.x.x (along with the connector 3.0.16)
- MySQL 5 ( known issue [1] )
- PostgreSQL 8.x
- HypersonicSQL
- Derby
- Oracle 9 and 10g (make sure to use the latest driver of Oracle's 10 branch even when running Oracle 9)
- Microsoft SQL Server
- MaxDB

## 1.5. Source building

The source building mechanism works on Linux, Windows, MacOS X and any 'Unix like' operating system.

[1] http://wiki.jboss.org/wiki/Wiki.jsp?page=AvoidMySQL5DataTruncationErrors

# 2

# Installation

Depending on your needs, there are several different methods to get JBoss Portal up and running.

### Note

Pre-configured clustered versions are available from the download page [1] , in the same 3 flavors as the non-clustered version. The installation difference, being that they must be deployed in the *all* configuration in JBoss AS. Read Chapter 11 for more details on how to customize your clustered install, once deployed.

### Note

Binary distributions of JBoss Portal include the WSRP service which is not automatically deployed with the source distribution. WSRP is built upon the JBoss WS web service stack. As such, it has some additional constraints. In particular, there is a known issue with the version 1.0.0.GA of JBoss WS (bundled with JBoss Application Server 4.0.4.GA) that prevents the complete deployment of JBoss Portal's WSRP service if the user is not online or behind a firewall/proxy. This, in turn, prevents the deployment of JBoss Portal. If you do not need the WSRP service, you can remove the `portal-wsrp.sar` file from the `jboss-portal.sar` file. If you'd like to use the WSRP service, the JBoss WS issue has been addressed in version 1.0.2.GA of JBoss WS. Please follow the instructions on how to upgrade JBoss WS [2] as found on JBoss Portal's wiki [3] .

## 2.1. Installing from Bundled Download

This is the easiest and fastest way to get JBoss Portal installed and running. The reason, is that the download bundle contains JBoss Application Server, and JBoss Portal uses the embedded Hypersonic Database.

### 2.1.1. Installing the Bundle

- **Get the Bundle:** The download bundle is available from our download page [4] . Bundles are noted with the 'JBoss Portal + AS' naming convention.
- **Extract the bundle:** Extract the zip archive to a directory of your choosing. In windows, we recommend, **C:\jboss-X.X.X**
- **Start the Server:** Go to JBOSS_INSTALL_DIRECTORY/bin and execute **run.bat** (**run.sh**, if Linux)

[1] http://labs.jboss.com/portal/jbossportal/download/index.html
[2] http://wiki.jboss.org/wiki/Wiki.jsp?page=WSRP_UpdateJBossWS
[3] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossPortal
[4] http://labs.jboss.com/portal/jbossportal/download/index.html

### Note

During the first boot (ever), SQL errors in the log, like the one below, can be safely ignored. They are thrown when the portal checks for the existence of the initial tables, before it creates them for you.

```
16:43:39,234 WARN [JDBCExceptionReporter] SQL Error: -22, SQLState: S0002
16:43:39,234 ERROR [JDBCExceptionReporter] Table not found in statement ...
```

Point your browser to *http://localhost:8080/portal* , and you should see the Portal HomePage. You can now login using one of the two default accounts: *user/user* or *admin/admin* .

## 2.2. Installing from Binary Download

The binary download package typically consists of the `jboss-portal.sar` , documentation (which you are already reading), and a set of preconfigured datasource descriptors that allow JBoss Portal to communicate with a database.

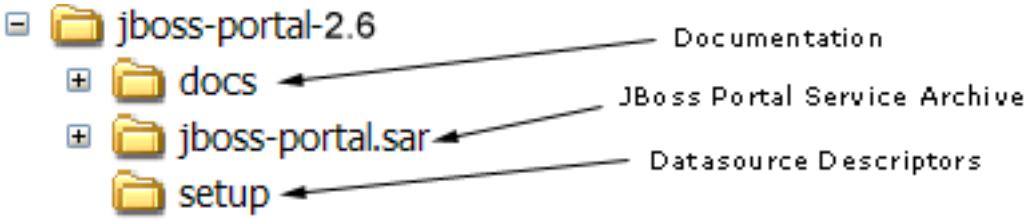
This installation method is preferred by those who already have JBoss Application Server installed.

### 2.2.1. Setting up your environment

#### 2.2.1.1. Getting the Binary

The binary download is available from our download page [5] .

Once downloaded and extracted, the folder hierarchy should look like this:




We will be using files contained in this download in the further sections, so please download and extract it first.

#### 2.2.1.2. Application Server Setup

Of course you will need to install JBoss Application Server prior to installing JBoss portal, if you didn't do so yet, please install JBoss 4.0.5+ from here [6] .

### Warning

Make sure to download the JBoss AS Zip version. **DO NOT ATTEMPT to deploy JBoss Portal on the installer version of JBoss AS!** We are currently working on aligning the Application installer with JBoss Portal.

#### 2.2.1.3. Database Setup

You will need a database for JBoss Portal to function, you can use any database supported by Hibernate.

[5] http://labs.jboss.com/portal/jbossportal/download/index.html
[6] http://labs.jboss.com/portal/jbossas/download/index.html

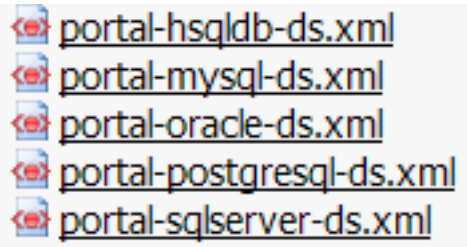
1. **Create a new Database:** For example purposes we call this new database *jbossportal*

2. **Grant access rights for a user to your database:** You must make sure the user has access to this new DB, as JBoss Portal will need to create the tables and modify data within them.

3. **Deploy your JDBC connector:** You must make available a JDBC connector for JBoss Portal to communicate with your database. The connector lib should be placed in `JBOSS_INSTALL_DIRECTORY/server/default/lib/*`

#### 2.2.1.4. DataSource Configuration

The JBoss Portal download you extracted in Section 2.2.1.1 contains pre-configured datasource descriptors, you can use for most popular RDBMS under the *setup* directory.




At this point, you should configure the one that suits you best with your Database and JDBC driver.

```
<?xml version="1.0" encoding="UTF-8"?>
<datasources>
  <local-tx-datasource>
    <jndi-name>PortalDS</jndi-name>
    <connection-url>jdbc:postgresql:jbossportal</connection-url>
    <driver-class>org.postgresql.Driver</driver-class>
    <user-name>portal</user-name>
    <password>portalpassword</password>
  </local-tx-datasource>
</datasources>
```

Please verify that the username, password, url, and driver-class are correct for your flavor of DB. You can deploy the datasource file by itself to test, in advance.

## 2.2.2. Deploying JBoss Portal

1. **Deploy:** Copy the datasource descriptor file (*-ds.xml) you modified above AND the *jboss-portal.sar* from the download folder to `JBOSS_INSTALL_DIRECTORY/server/default/deploy/`.

2. **Start the Server:** Go to `JBOSS_INSTALL_DIRECTORY/bin` and execute **run.bat** (**run.sh**, if Linux)

### Note

During the first boot (ever), SQL errors in the log, like the one below, can be safely ignored. They are thrown when the portal checks for the existence of the initial tables, before it creates them for you.

```
16:43:39,234 WARN [JDBCExceptionReporter] SQL Error: -22, SQLState: S0002
16:43:39,234 ERROR [JDBCExceptionReporter] Table not found in statement ...
```

Point your browser to *http://localhost:8080/portal* , and you should see the Portal HomePage. You can now login using one of the two default accounts: *user/user* or *admin/admin* .

## 2.3. Installing from Sources

### 2.3.1. Getting the Sources

There are two ways for you to obtain the JBoss Portal source files:

- From our download page [7]
- From SVN, using the following URL:

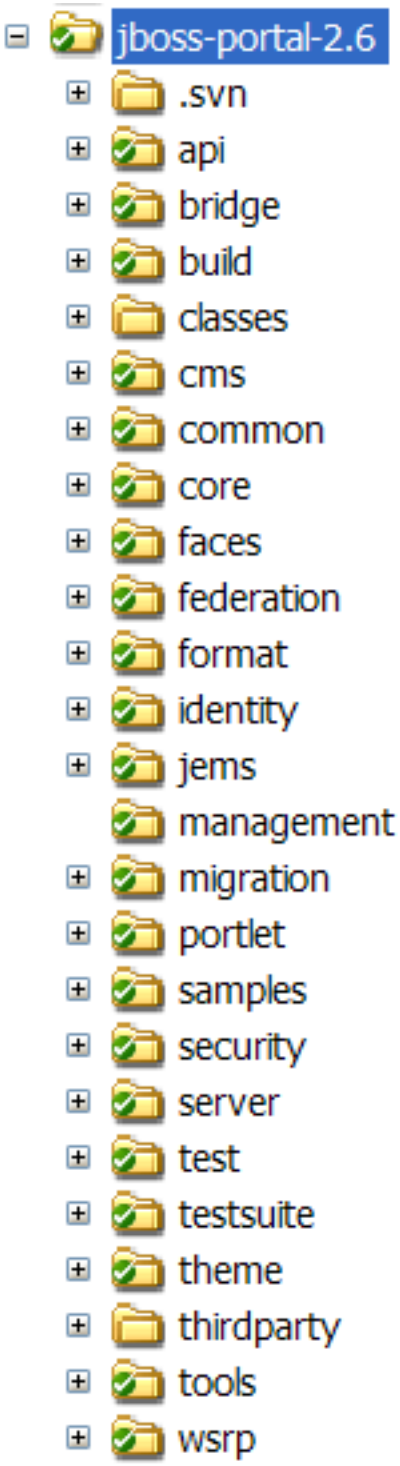
```
http://anonsvn.jboss.org/repos/portal/trunk/
```

**Note**

For more information on Portal SVN, and accessing different versions of the Portal codebase, please visit this wiki article [8] .

After checking out of SVN or extracting the Source zip, your directory structure should look like this:

[7] http://labs.jboss.com/portal/jbossportal/download/index.html
[8] http://wiki.jboss.org/wiki/Wiki.jsp?page=PortalSVNRepo




**Note**

The screenshot above, shows the downloaded source directory. Those of you checking out from SVN, will be missing the *thirdparty* directory. This directory is created when you first run the build in the following steps.

## 2.3.2. Setting up your environment

### 2.3.2.1. Application Server Setup

Of course you will need to install JBoss Application Server prior to installing JBoss portal, if you didn't do so yet, please install JBoss 4.0.5+ from here [9] .

## Warning

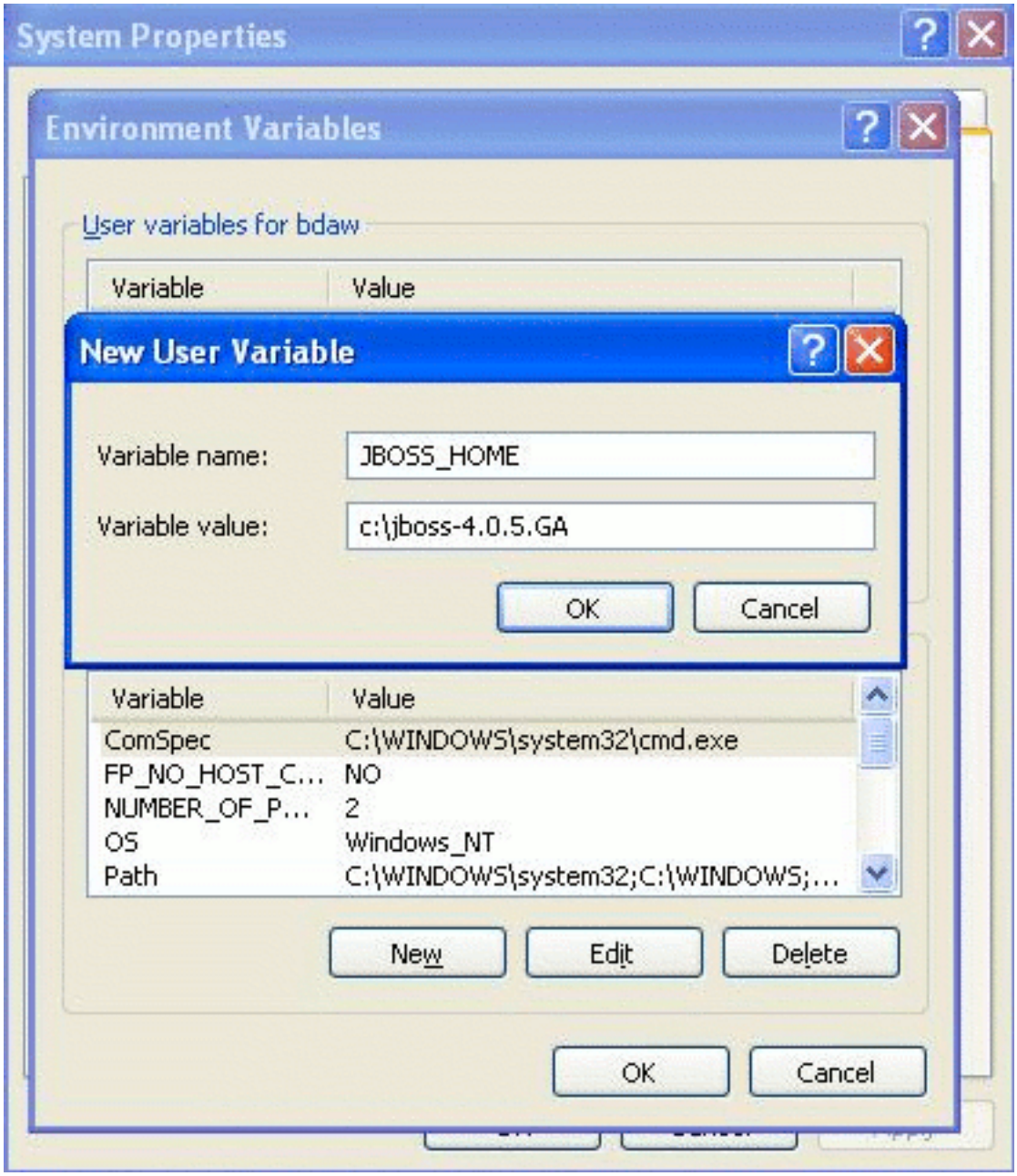
Make sure to download the JBoss AS Zip version. **DO NOT ATTEMPT to deploy JBoss Portal on the installer version of JBoss AS!** We are currently working on aligning the Application installer with JBoss Portal.

#### 2.3.2.2. Operating System Environment Setting

For the build targets to work, you must first set the `JBOSS_HOME` environment variable in your operating system, to the root directory of the JBoss Application Server installation.

In Windows, this is accomplished by going to *Start > Settings > Control Panel > System > Advanced > Environment Variables* . Now under the *System Variables* section, click *New* . You will be setting the `JBOSS_HOME` environment variable to the location of your JBoss Application Server installation:

[9] http://labs.jboss.com/portal/jbossas/download/index.html




On a Unix-like Operating System, you would accomplish this by typing: **export JBOSS_HOME=/path/to/your/jboss/directory**

#### 2.3.2.3. Database Setup

You will need a database for JBoss Portal to function, you can use any database supported by Hibernate.

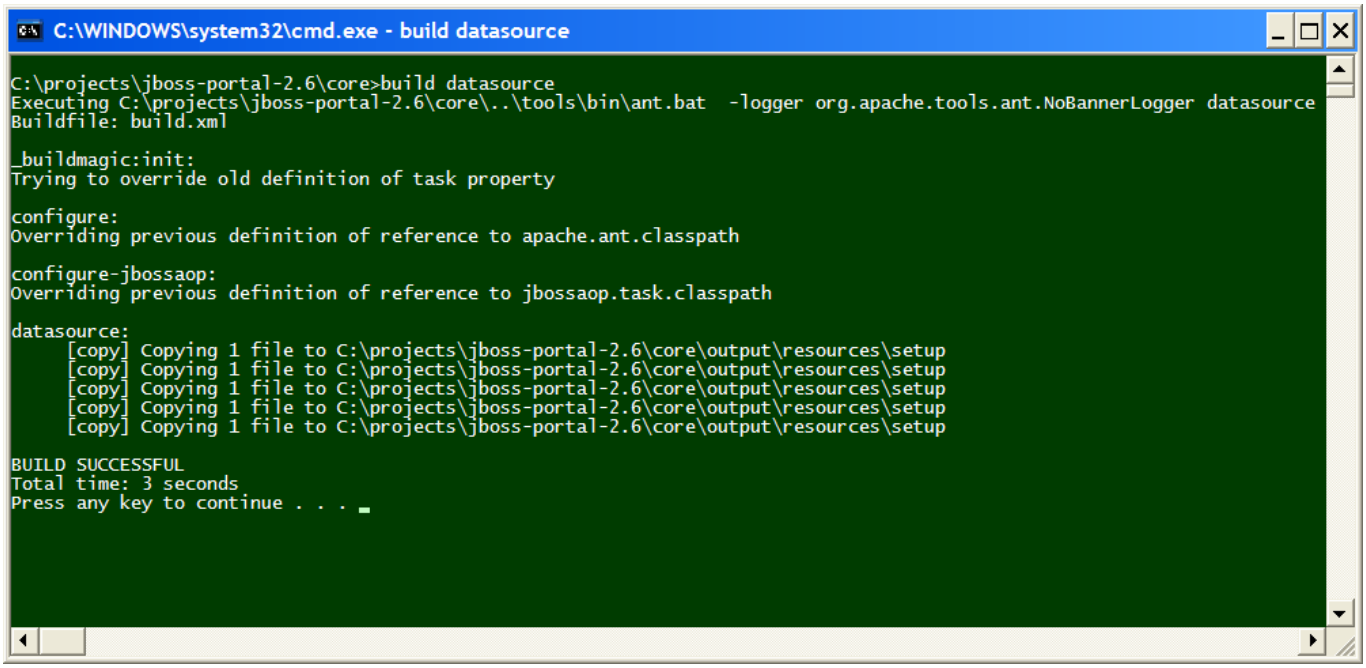
1. **Create a new Database:** For example purposes we call this new database *jbossportal*
2. **Grant access rights for a user to your database:** You must make sure the user has access to this new DB, as JBoss Portal will need to create the tables and modify data within them.
3. **Deploy your JDBC connector:** You must make available a JDBC connector for JBoss Portal to communicate with your database. The connector lib should be placed in `JBOSS_HOME/server/default/lib/*`

### 2.3.2.4. DataSource Configuration

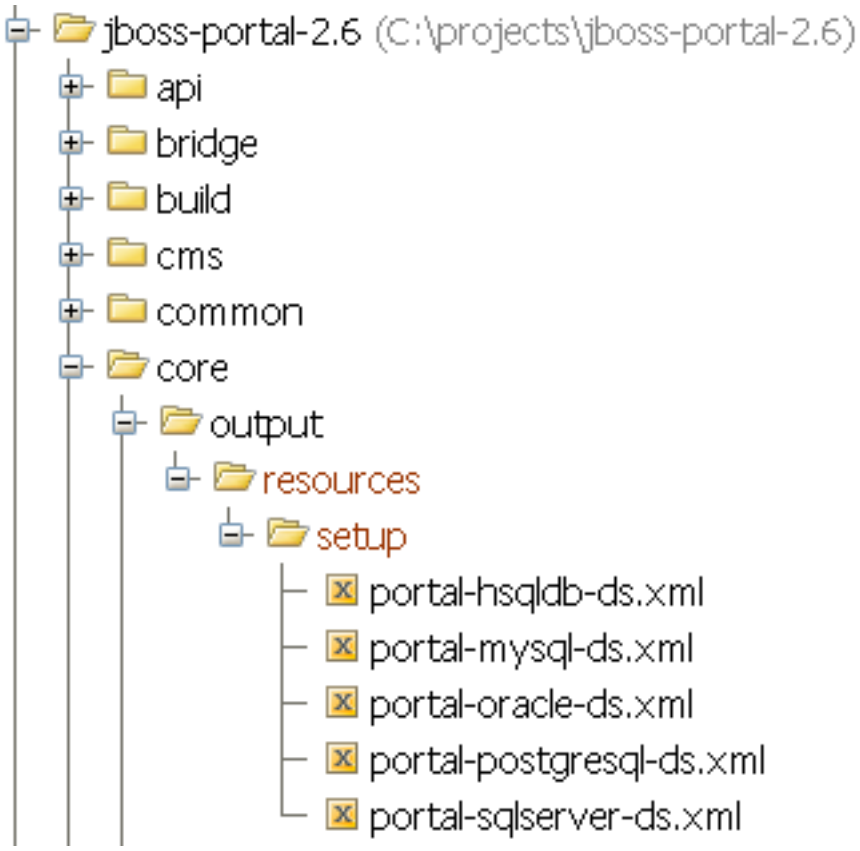
You will need a valid datasource descriptor, for JBoss Portal to communicate with your database. Having obtained the sources and having set your JBOSS_HOME environment variable ( Section 2.3.2.2 ), you can now have the JBoss Portal build system generate preconfigured datasources for you.

Navigate to `JBOSS_PORTAL_HOME_DIRECTORY/core` and type:

```
build datasource
```




Once complete, the datasource build should produce the following directory and file structure:




At this point, you should configure the one that suits you best with your Database and JDBC driver.

```
<?xml version="1.0" encoding="UTF-8"?>
<datasources>
  <local-tx-datasource>
    <jndi-name>PortalDS</jndi-name>
    <connection-url>jdbc:postgresql:jbossportal</connection-url>
    <driver-class>org.postgresql.Driver</driver-class>
    <user-name>portal</user-name>
    <password>portalpassword</password>
  </local-tx-datasource>
</datasources>
```

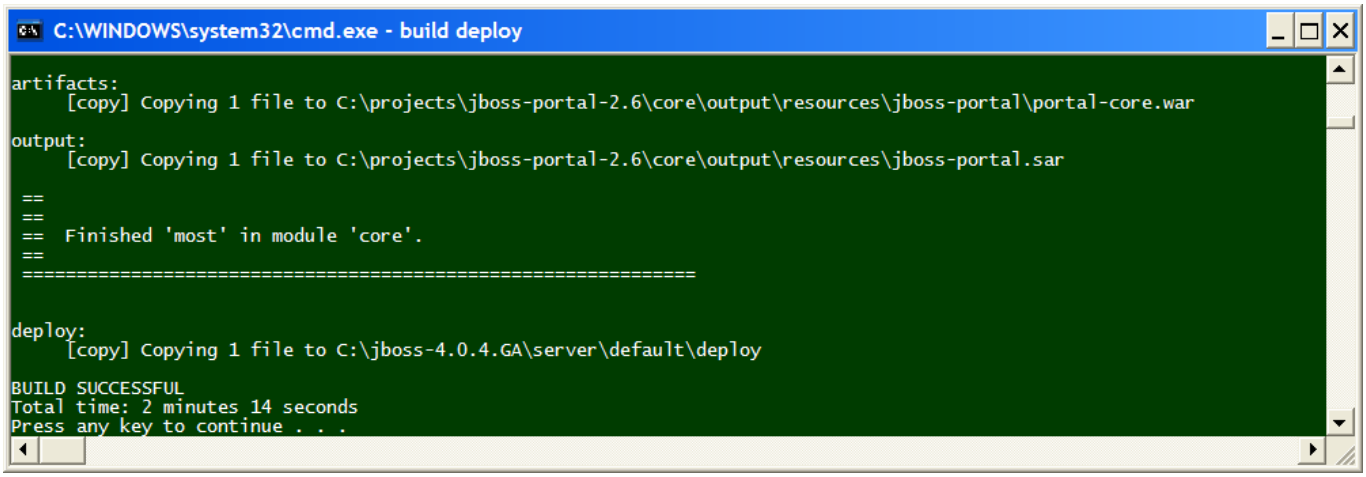
Please verify that the username, password, url, and driver-class are correct for your flavor of DB.

Now **copy** your datasource descriptor to `JBOSS_HOME/server/default/deploy`

## 2.3.3. Building/Deploying from Sources

To build and deploy the JBoss Portal service, go to `JBOSS_PORTAL_HOME_DIRECTORY/build` and type:

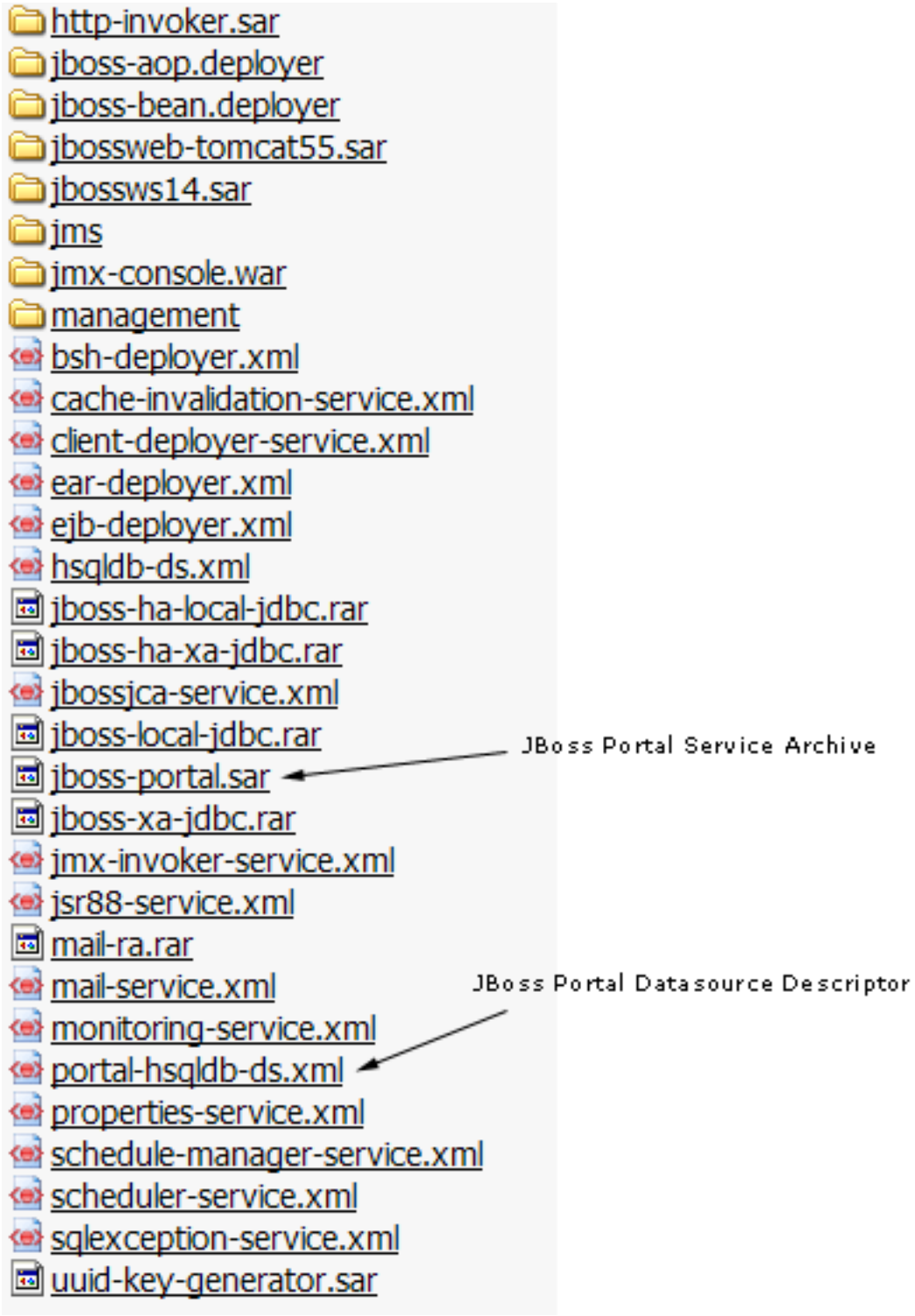
```
build deploy
```




### Note

To build the clustered version, you will need to go to `JBOSS_PORTAL_HOME_DIRECTORY/build` and type: **build main** Then, go to `JBOSS_PORTAL_HOME_DIRECTORY/core` and type: **build deploy-ha** This will copy the `jboss-portal-ha.sar` to your `all` configuration for you.

At the end of the build process, the `jboss-portal.sar` is copied to `JBOSS_HOME/server/default/deploy` :




Please verify that your `JBOSS_HOME/server/default/deploy` directory, contains both necessary files before starting JBoss Application Server.

**Start the Server:** Go to JBOSS_HOME/bin and execute run.bat (run.sh, if Linux)

### Note

During the first boot (ever), SQL errors in the log, like the one below, can be safely ignored. They are thrown when the portal checks for the existence of the initial tables, before it creates them for you.

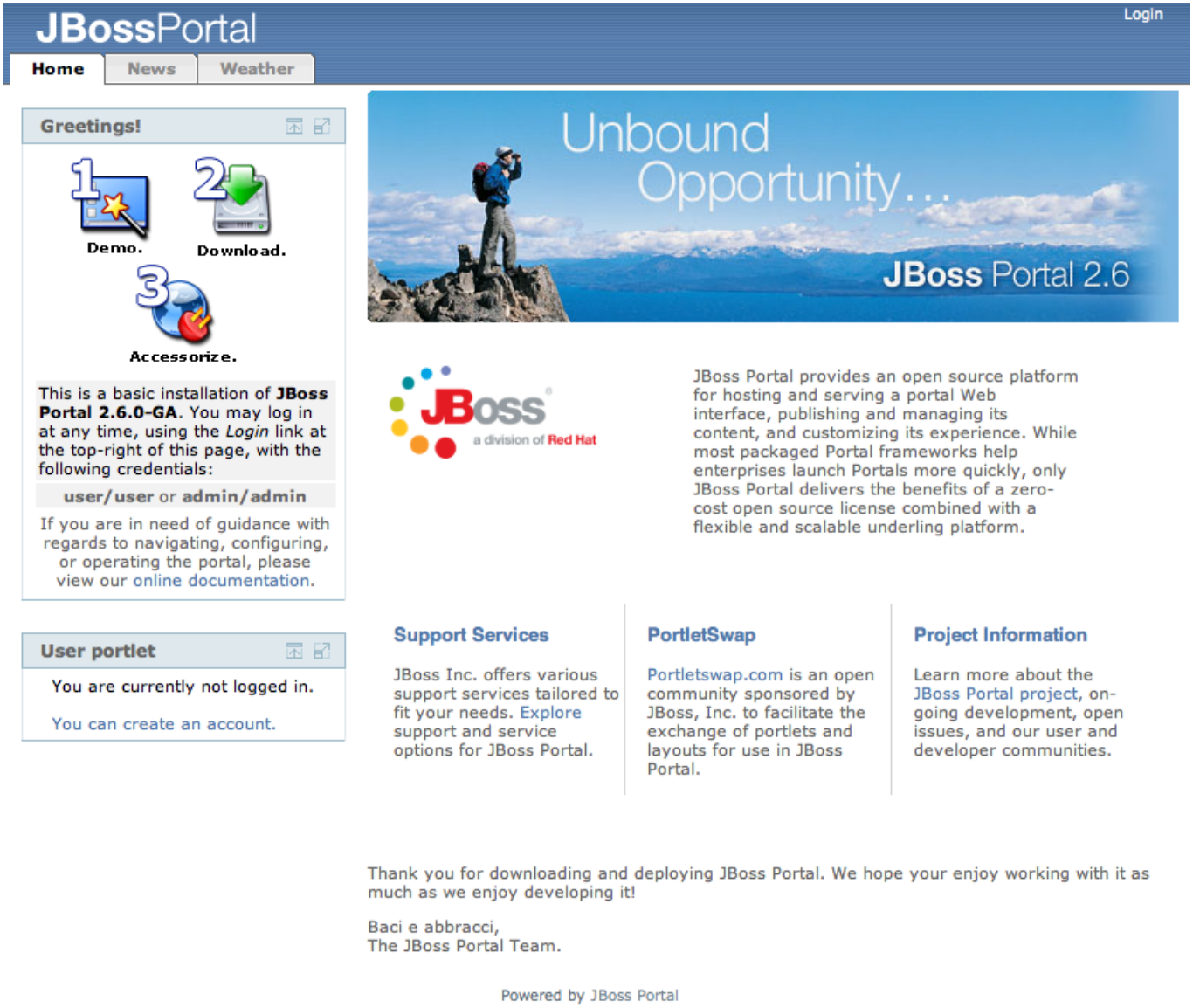
```
16:43:39,234 WARN [JDBCExceptionReporter] SQL Error: -22, SQLState: S0002
```

```
16:43:39,234 ERROR [JDBCExceptionReporter] Table not found in statement ...
```

Point your browser to *http://localhost:8080/portal* , and you should see the Portal HomePage. You can now login using one of the two default accounts: *user/user* or *admin/admin* .

### Note

This installs a bare version of Portal. In previous versions, several additional modules were deployed as well but this has since been modularized to provide greater flexibility. You might want to deploy additional modules to augment Portal (see Portal's module list [10] for more information). You can also deploy all the modules all at once using **build deploy-all** in the `build` directory.




[10] http://wiki.jboss.org/wiki/Wiki.jsp?page=PortalModules

# 3

# Customizing your installation

**Thomas Heute** `<theute@jboss.org>`

**Roy Russo** `<roy at jboss dot org>`

This section is intended to describe some customization features available in JBoss Portal. If it is not covered here, please view the FAQ chapter at the end of this document or the descriptor chapter ( Section 6.3 ) for further documentation on configuration and tuning JBoss Portal.

## 3.1. Changing the port

It is common to have a server running on the port 80 instead of the default port 8080.

It might be easier to use port forwarding [1] than to change the port manually. Since port forwarding is not always possible, below are the instructions to change the port number manually.

To change it, you need to edit the file `$JBOSS_HOME/server/default/deploy/jbossweb-tomcat55.sar/server.xml` and change the port value of the HTTP Connector. You can also change the value of the SSL port, by default it is set to 8443. Remember to uncomment the following when you have configured it:

```
<!-- SSL/TLS Connector configuration using the admin devl guide keystore
<Connector port="8443" address="${jboss.bind.address}"
     maxThreads="100" strategy="ms" maxHttpHeaderSize="8192"
     emptySessionPath="true"
     scheme="https" secure="true" clientAuth="false"
     keystoreFile="${jboss.server.home.dir}/conf/chap8.keystore"
     keystorePass="rmi+ssl" sslProtocol = "TLS" />
-->
```

Please refer to Section 12.3.2 to update the WSRP after having changed the port.

Now you can restart JBoss and use the new port that you defined. On systems like Linux, you need privileges to be able to run a server on a port lower than 1000, starting JBoss on the port 80 as a regular user will not work, for testing you can log as root but is not recommended if the server is public as it could be a security breach in your system.

[1] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossOnPort80

## 3.2. Changing the context path

By default, the "main" page of JBoss portal will be accessible at `http://localhost:8080/portal/index.html`. You may want to change that either to a different name or to `http://localhost:8080/index.html`.

> **Note**
>
> By default, Tomcat holds on to the root context '/'. You may need to either remove the *$JBOSS_HOME\server\default\deploy\jbossweb-tomcat55.sar\ROOT.war* or add a jboss-web.xml (declaring another context-root other than '/')under its WEB-INFO directory for the below changes to take effect on restart.

You can accomplish this, with either a deployed jboss-portal.sar or before you build from source:

- **Binary method:**

  1. Open *JBOSS_INSTALL_DIRECTORY/server/default/deploy/jboss-portal.sar/portal-server.war/WEB-INF/jboss-web.xml*

```
<?xml version="1.0"?>
<jboss-web>
   <security-domain>java:jaas/portal</security-domain>
   <context-root>/portal</context-root>
   <replication-config>
      <replication-trigger>SET_AND_GET</replication-trigger>
      <replication-type>SYNC</replication-type>
   </replication-config>
   <resource-ref>
      <res-ref-name>jdbc/PortalDS</res-ref-name>
      <jndi-name>java:PortalDS</jndi-name>
   </resource-ref>
</jboss-web>
```

  2. Edit the *context-root* element to whatever you desire.

```
<context-root>/</context-root>
```

- **Source method:** Edit the file `$PORTAL_HOME/build/local.properties` (You can copy the file `$PORTAL_HOME/build/etc/local.properties-example` and modify it for your own settings.) and change `portal.web.context-root` to anything you want.

  Now clean the project (ant clean) then build JBoss portal (ant) and redeploy it for the context path changes to take effect. For build instructions, please see: Section 2.3

## 3.3. Forcing the DB dialect

If you encounter that the Hibernate dialect is not working properly and would like to override the default behaviour, follow the instructions contained in this section:

**Note**

Under most common circumstances, the auto-detect feature should work fine.

### 3.3.1. DB Dialect settings for the portal core

Modify *jboss-portal.sar/conf/hibernate/[module]/hibernate.cfg.xml* . A list of supported dialects for Hibernate3, can be found here [2] .

```
<?xml version='1.0' encoding='utf-8'?>
<!DOCTYPE hibernate-configuration PUBLIC
"-//Hibernate/Hibernate Configuration DTD//EN"
"http://hibernate.sourceforge.net/hibernate-configuration-3.0.dtd">
<hibernate-configuration>
<session-factory>
<property name="connection.datasource">java:PortalDS</property>
<property name="show_sql">false</property>
<property name="cache.provider_class">org.hibernate.cache.EhCacheProvider</property>
<property name="cache.use_query_cache">true</property>

<!-- Force the dialect instead of using autodetection -->
<!--
<property name="dialect">org.hibernate.dialect.PostgreSQLDialect</property>
-->

<!-- Mapping files -->
<mapping resource="conf/hibernate/user/domain.hbm.xml"/>
</session-factory>
</hibernate-configuration>
```

### 3.3.2. DB Dialect settings for the CMS component

Modify *jboss-portal.sar/portal-cms.sar/conf/hibernate/cms/hibernate.cfg.xml* . A list of supported dialects for Hibernate3, can be found here [3] .

```
<?xml version='1.0' encoding='utf-8'?>
<!DOCTYPE hibernate-configuration PUBLIC
    "-//Hibernate/Hibernate Configuration DTD//EN"
    "http://hibernate.sourceforge.net/hibernate-configuration-3.0.dtd">
<hibernate-configuration>
   <session-factory>
      <property name="connection.datasource">java:@portal.datasource.name@</property>
      <property name="show_sql">@portal.sql.show@</property>
      <property name="cache.use_second_level_cache">false</property>
      <property name="cache.use_query_cache">true</property>

      <!-- Force the dialect instead of using autodetection -->
      <!--
      <property name="dialect">org.hibernate.dialect.PostgreSQLDialect</property>
      -->

      <!-- Mapping files -->
      <mapping resource="conf/hibernate/cms/domain.hbm.xml"/>
   </session-factory>
</hibernate-configuration>
```

[2] http://www.hibernate.org/hib_docs/v3/reference/en/html/session-configuration.html#configuration-optional-dialects

[3] http://www.hibernate.org/hib_docs/v3/reference/en/html/session-configuration.html#configuration-optional-dialects

## 3.4. Disabling dynamic proxy unwrapping

JBoss Portal use the JBoss Microkernel for the service infrastructure. The JBoss Microkernel provides injection of services into other services, also known as wiring. Unfortunately it is only possible to inject dynamic proxies that talks to the MBeanServer due to the fact the Microkernel is JMX based. The overhead at runtime is minimal since the Microkernel implementation is highly optimized, however when it is used with Java 5 a noticeable bottleneck appears due to the fact that the implementation of the JMX API classes *javax.management.** provided by the Java Platform performs synchronization. This does not happen under JDK 1.4 since those classes are implemented by JBoss MX.

JBoss Portal services use a special kind of Model MBean called JBossServiceModelMBean which allows to unwrap the injected dynamic proxies and replace them by the real POJO services. This allows to remove the bottleneck with Java 5 and provide an extra boost of performances on JDK 1.4. By default that feature is enabled but it is possible to disabled it using command line arguments.

```
>run.sh -Dportal.kernel.no_proxies=false
```

# 4

# Upgrading 2.4 - 2.6

**Roy Russo** `<roy at jboss dot org>`

**Boleslaw Dawidowicz** `<boleslaw dot dawidowicz at redhat dot com>`

**Warning**

Before performing any instructions or operations mentioned below remember to backup your database content and the whole application server directory!

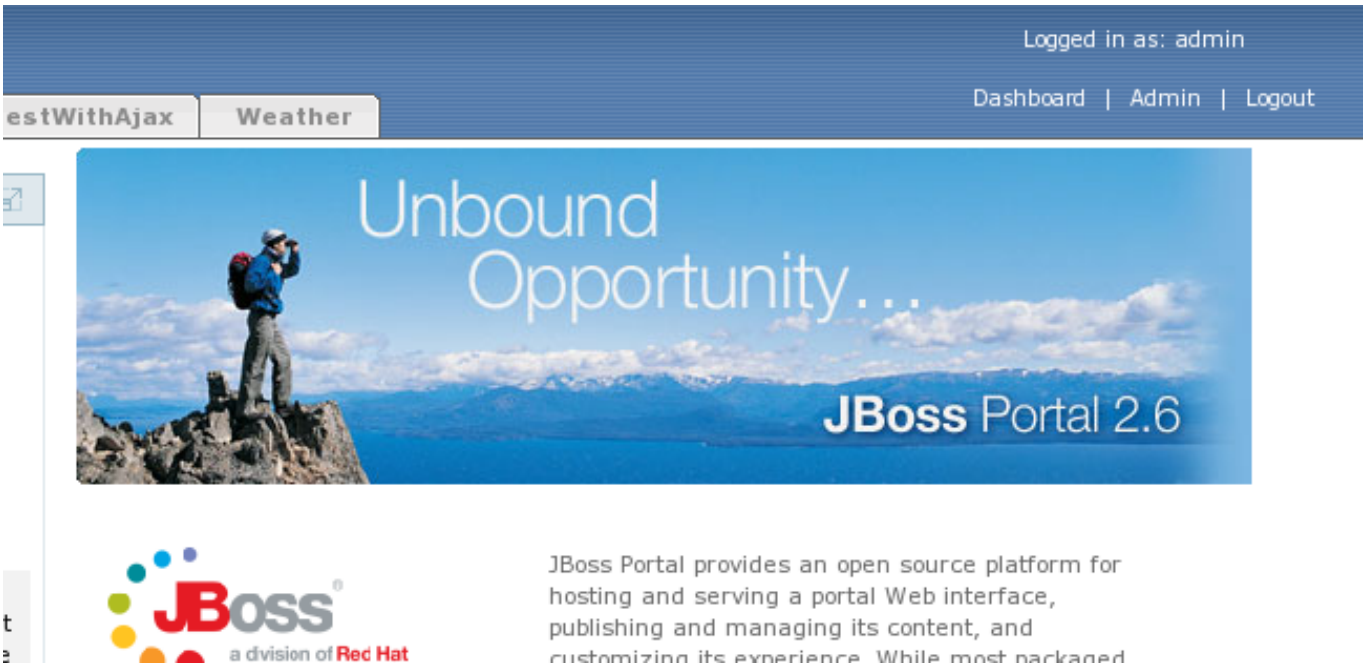
## 4.1. Manual upgrade

Although database schema remains the same in JBoss Portal 2.6 there are several differences that prevent from simple deployment of newest portal version using JBoss Portal 2.4 database. In this chapter we will list major ones and give instructions on how to manually update proper data.

Upgrading procedure can be quite straightforward:

- Remove **$JBOSS_HOME/server/default/deploy/jboss-portal.sar** file.
- Update data in portal database like described in following sections of this chapter
- Deploy JBoss Portal 2.6

### 4.1.1. Theme




Themes in 2.6 version changed as now they contain additional areas - the best example is upper right corner where links like "Login", "Admin", "My Dashboard" are visable. If you use default theme like "renaissance" that is present in 2.6, you shouldn't need to do anything. To update your custom themes please refer to those bundled with portal as an example.

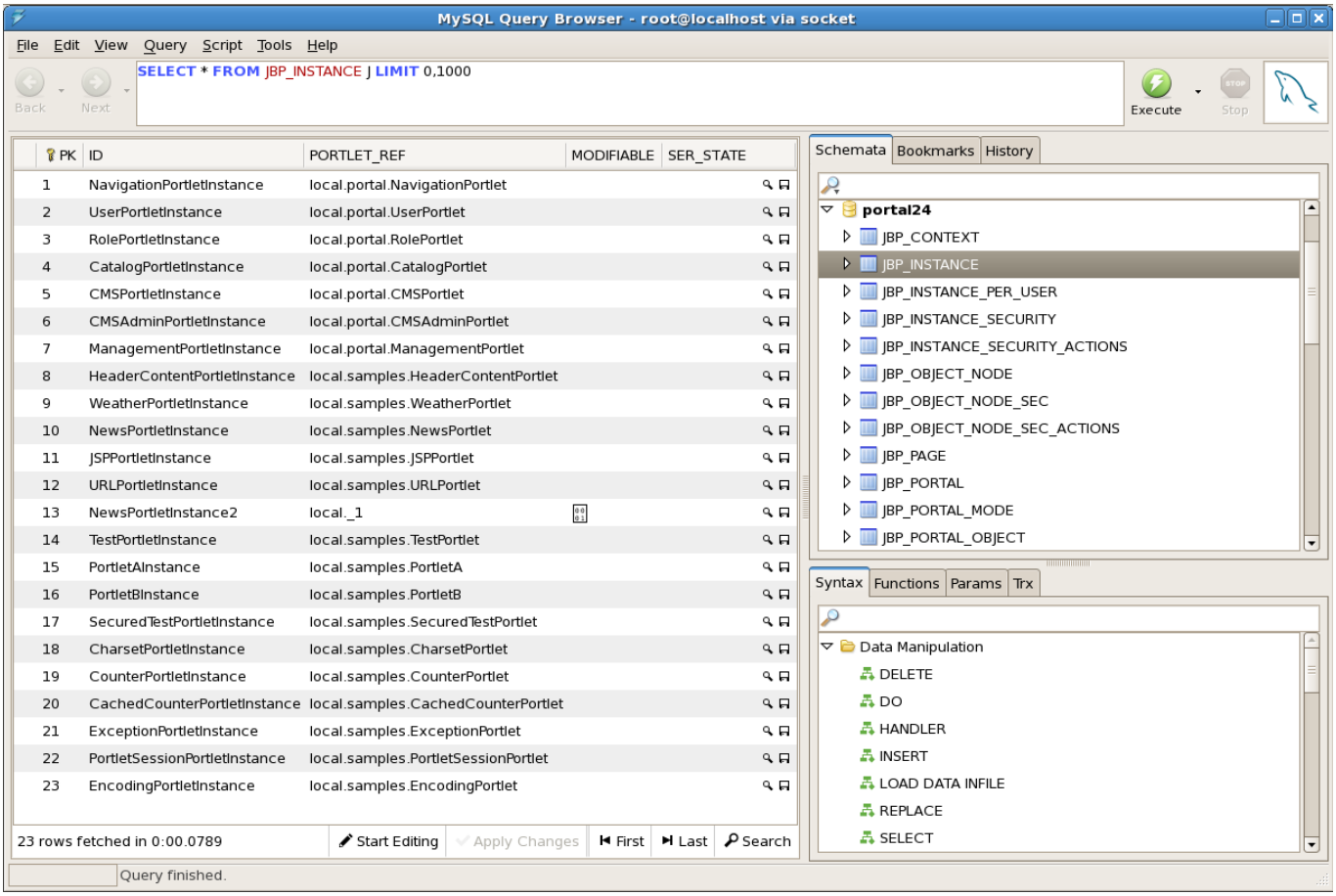
> **Note**
>
> If you stay with old theme files you may find JBP 2.6 unusable to the point that you may not even be able to log in

### 4.1.2. Database

> **Note**
>
> All things described in this section can be done using AdminPortlet. Treat this directions more as guideline if you need to automate migration for big portal deployment.

Database schema wasn't changed between 2.4 and 2.6 releases, but still content that is kept in it changed slightly in few areas. You can easily update the data manually by using tools proper for your RDBMS. If you use *MySQL* you can use *MySQL Query Browser* that can be downloaded from *MySQL* website.

> **Note**
>
> Instructions below refer to standard JBoss Portal 2.4 deployment. If you named core portlets, portlet instances or portlet windows differently you will need to make proper modifications in those steps.




#### 4.1.2.1. Portlet names

Names of few core bundled portlets changed. To update them you need to:

In **JBP_INSTANCES** table:

- Change "*local.portal.CMSPorlet*" in *PORTLET_REF* column to "*local./portal-cms.CMSPortlet*"
- Change "*local.portal.CMSAdminPorlet*" in *PORTLET_REF* column to "*local./portal-cms.CMSAdminPortlet*"
- Change "*local.portal.ManagementPorlet*" in *PORTLET_REF* column to "*local./portal-admin.AdminPortlet*"

> **Note**
>
> Instead of editing database you can destroy those instances in AdminPortlet and recreate them.

*NavigationPortlet* from JBP 2.4 is not present anymore. Its functionality is now realized by *PageCustomizerInterceptor* so all references to *NavigationPortlet* should be removed from all portal pages. You can do it either by cleaning up database content or by using *AdminPortlet* in Portal interface. In database you should remove:

- Rows containing "*local.portal.NavigationPortlet*" in "*PORTLET_REF*" column in "*JBP_INSTANCES*" table.
- Rows containing "*NavigationPortletInstance*" in "*INSTANCE_REF*" column in "*JBP_WINDOW*" table.
- Rows containing "*NavigationPortletWindow*" in "*NAME*" column in "*JBP_OBJECT*" table.

### Note

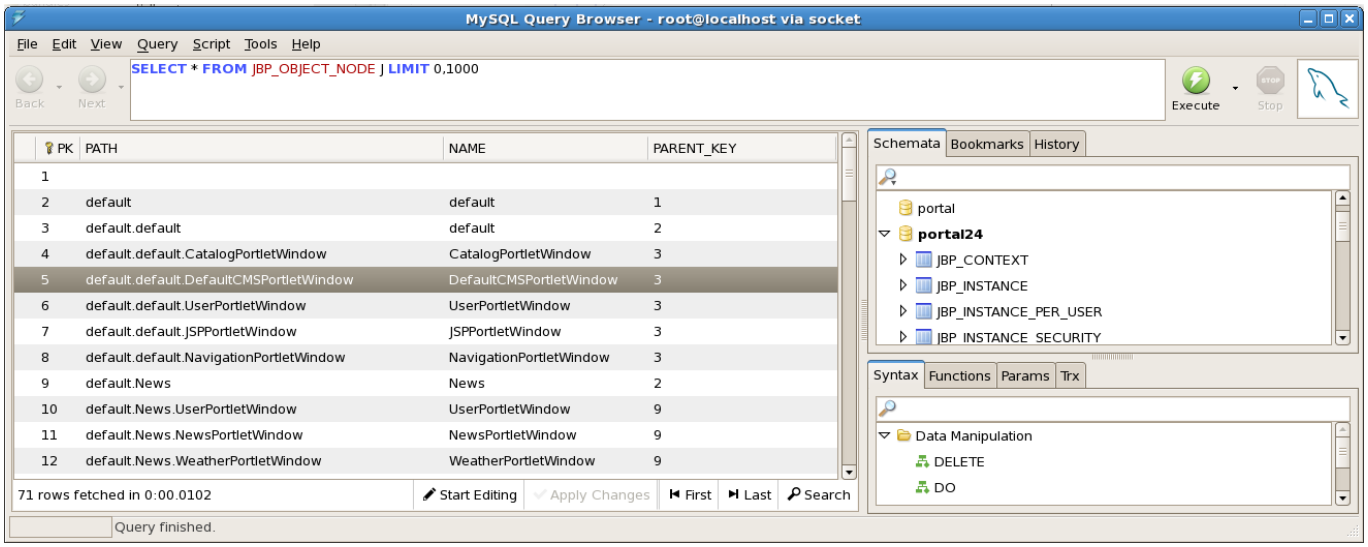
Instead of editing database you can just remove NavigationPortletInstance using AdminPortlet.

#### 4.1.2.2. CMS

This is probably the less trival part to do directly in database. In JBP 2.6 version the way that CMS content is being displayed changed significantly. Please refer to Content Integration and CMS Portlet chapters for more information. Basically currently there is no need to have more than one instance of *CMSPortlet* and the portlet window displays CMS content not by referring to that portlet instance but by having proper *content-type* defined. In "*default-object.xml* you will find following configuration:

```
<window>
   <window-name>CMSWindow</window-name>
   <content>
      <content-type>cms</content-type>
      <content-uri>/default/index.html</content-uri>
   </content>
   <region>center</region>
   <height>0</height>
</window>
```

Open **JBP_OBJECT_NODE** table in your database schema. By looking at **PATH** column you will easily find any occurances of CMS in your portal deployment




For any row you will identify as referring to *CMSPortletWindow* in your system remember the number in **PK** column. It will be needed in next steps

Go to **JBP_WINDOW** table and find row with the same **PK** value like the one from **JBP_OBJECT_NODE** table. In such row replace "*CMSPortletInstance*" with a path to your CMS resource. For example by default portal is displaying "*/default/index.html*".

Go to **JBP_PORTAL_OBJECT_PROPS** table and add a row containing:

- The number you remembered in "*OBJECT_KEY*" column.
- "*portal.windowContentType*" in "*NAME*" column.
- "*cms*" in "*jbp_VALUE*" column.

### Note

Remember that you can also change portlet window content type and configure path to CMS resource using AdminPortlet

# 5

# Portlet Primer

**Roy Russo** <roy@jboss.org>

## 5.1. JSR 168 Overview

The JSR 168 specification aims at defining porlets that can be used by any JSR168 portlet container also called portals. There are different portals out there with commercial and non-commercial licences. In this chapter we will briefly describe such portlets but for more details you should read the specifications available on the web.

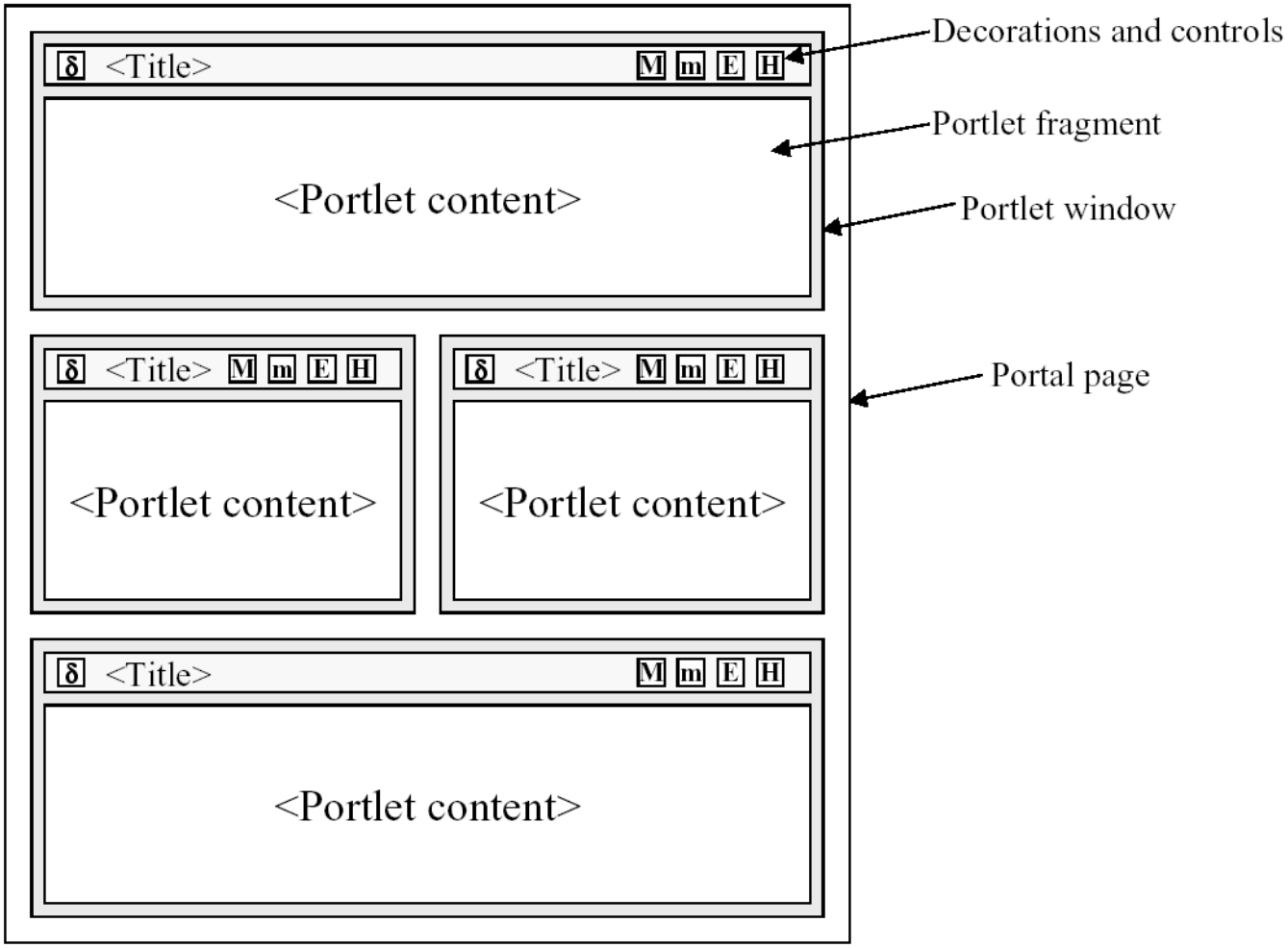
> **Note**
>
> This section is a brief overview of the JSR 168 Portlet Specification [1] , and it does not cover the topics in great detail. We strongly encourage portlet developers to read the Specification that can be found here [2] .

As of today, JBoss portal is fully JSR168 1.0 compliant, that means that any JSR168 portlet will behave as it should inside the portal.

### 5.1.1. Portal Pages

A portal can be seen as pages with different areas and inside areas, different windows and each window having one portlet.

[1] http://www.jcp.org/en/jsr/detail?id=168
[2] http://www.jcp.org/en/jsr/detail?id=168




## 5.1.2. Rendering Modes

A porlet can have different view modes, three modes are defined by the specification but a portal can extend those modes. The 3 modes are:

- VIEW - Generates markup reflecting the current state of the portlet.
- EDIT - Should allow a user to customize the behaviour of the portlet.
- HELP - Should provide some information to the user as to how to use the portlet.

## 5.1.3. Window States

Window states are an indicator of how much page real-estate a portlet should consume on any given page. There are 3 states defined by the specification:

- 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.

### 5.1.4. Section Status

This overview of the portlet specification, is a work in progress. Check back for more in-depth analsis of the specification, but please read on for real-world cases of how to leverage the specification.

## 5.2. Tutorials

The tutorials contained in this chapter are targetted toward portlet developers. Although they are a good starting and reference point, we do heavily recommend that portlet developers read and understand the Portlet Specification (JSR-168) [3] . We also recommend, using our JBoss Portal User Forums [4] for user-to-user help, when needed.

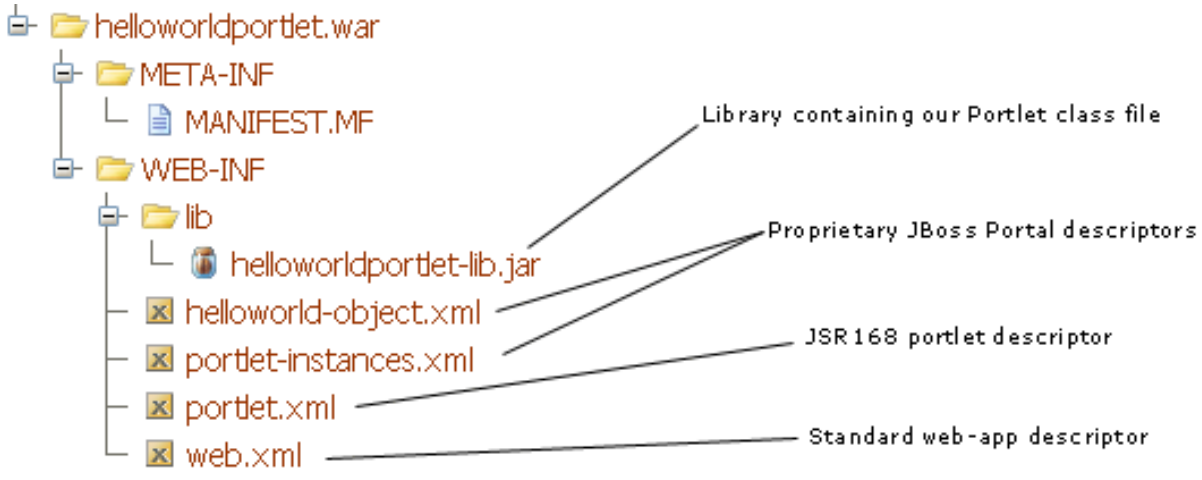
### 5.2.1. Deploying your first portlet

#### 5.2.1.1. Introduction

This section will introduce the reader to deploying his first portlet in JBoss Portal. It requires you download the HelloWorldPortlet from PortletSwap.com, using this link [5] .

#### 5.2.1.2. Package Structure

Portlets are packaged in war files, just like other JEE applications. A typical portlet war file can also include servlets, resource bundles, images, html, jsps, and other static or dynamic files you would commonly include.




#### 5.2.1.3. The Portlet Class

Included in the download bundle [6] you should have one java source file: *HelloWorldPortlet\src\main\org\jboss\portlet\hello\HelloWorldPortlet.java* , and it should contain the following:

[3] http://www.jcp.org/en/jsr/detail?id=168
[4] http://jboss.org/index.html?module=bb&op=viewforum&f=215
[5] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldPortlet.zip
[6] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldPortlet.zip

```
package org.jboss.portlet.hello;

import javax.portlet.GenericPortlet;
import javax.portlet.PortletException;
import javax.portlet.RenderRequest;
import javax.portlet.RenderResponse;
import javax.portlet.UnavailableException;
import java.io.IOException;
import java.io.PrintWriter;

public class HelloWorldPortlet extends GenericPortlet
{
   protected void doView(RenderRequest rRequest, RenderResponse rResponse)
                     throws PortletException, IOException, UnavailableException
   {
      rResponse.setContentType("text/html");
      PrintWriter writer = rResponse.getWriter();
      writer.write("Hello World!");
      writer.close();
   }
}
```

Now lets dissect our simplest of portlets:

- ```
  public class HelloWorldPortlet extends GenericPortlet
  ```
  All Portlets MUST implement the javax.portlet.GenericPortlet Interface.

- ```
  protected void doView(RenderRequest rRequest, RenderResponse rResponse) throws
                            PortletException, IOException, UnavailableException
  ```
  In this case, our *doView* will be called when the portlet is asked to render output in VIEW Mode.

- ```
  rResponse.setContentType("text/html");
  ```
  Just like in the servlet-world, you must declare what content-type the portlet will be responding in.

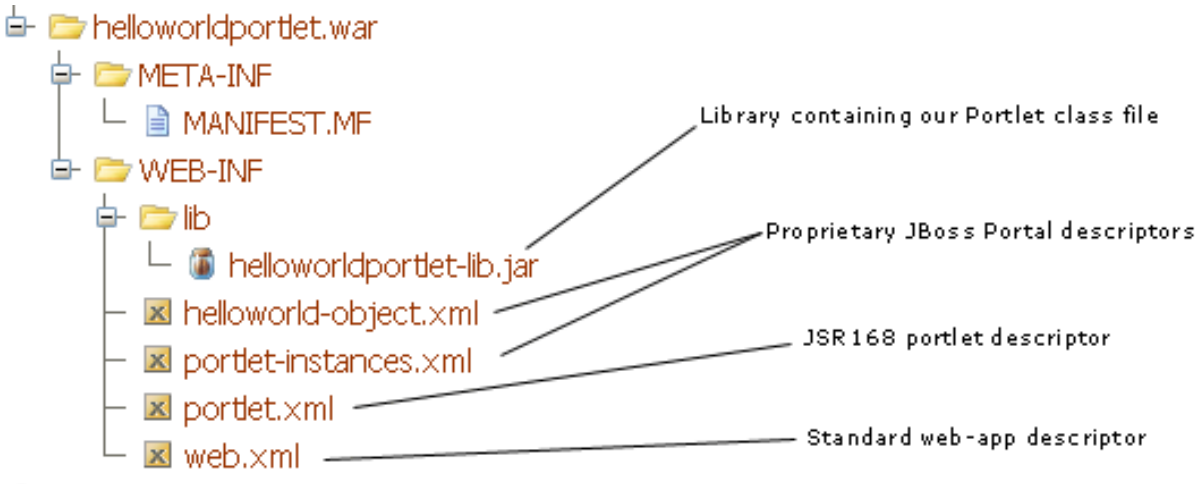
- ```
  PrintWriter writer = rResponse.getWriter();
  writer.write("Hello World!");
  writer.close();
  ```
  Here we output the text *Hello World!* in our portlet window.

### Note

Portlets are responsible for generating markup fragments, as they are included on a page and surrounded by other portlets.

#### 5.2.1.4. The Application Descriptors

JBoss Portal requires certain descriptors be included in your portlet war, for different reasons. Some of these descriptors are defined by the Portlet Specification, and some are specific to JBoss Portal.




Now lets explain what each of these does:

- portlet.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd
                                 http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             version="1.0">
   <portlet>
      <portlet-name>HelloWorldPortlet</portlet-name>
      <portlet-class>org.jboss.portlet.hello.HelloWorldPortlet</portlet-class>
      <supports>
         <mime-type>text/html</mime-type>
         <portlet-mode>VIEW</portlet-mode>
      </supports>
      <portlet-info>
         <title>HelloWorld Portlet</title>
      </portlet-info>
   </portlet>
</portlet-app>
```

  This file must adhere to its definition in the Portlet Specification. You may define more than one portlet application in this file.

  - 
```
<portlet-name>HelloWorldPortlet</portlet-name>
```
    Define your portlet name. It does not have to be the Class name.

  - 
```
<portlet-class>org.jboss.portlet.hello.HelloWorldPortlet</portlet-class>
```
    The FQN of your portlet class must be declared here.

  - 
```
<supports>
   <mime-type>text/html</mime-type>
   <portlet-mode>VIEW</portlet-mode>
</supports>
```
    The supports attributes allow you to declare extra vital information about the portlet. In this case, we are letting the portal know that it will be outputting text/html and only support a VIEW mode.

### Note

A content-type must be declared here for every portlet, and it must match with how the portlet is programmatically responding. Likewise, a portlet mode must be declared here and have a corresponding method in its class. In our case, the VIEW mode will map to the doView() in our class.

•

```
<portlet-info>
   <title>HelloWorld Portlet</title>
</portlet-info>
```

The portlet's title will be displayed as the header in the portlet window, when rendered, unless it is overridden programatically.

- portlet-instances.xml

```
<?xml version="1.0" standalone="yes"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portlet Instances 2.6//EN"
   "http://www.jboss.org/portal/dtd/portlet-instances_2_6.dtd">
<deployments>
   <deployment>
      <instance>
         <instance-id>HelloWorldPortletInstance</instance-id>
         <portlet-ref>HelloWorldPortlet</portlet-ref>
      </instance>
   </deployment>
</deployments>
```

This is a JBoss Portal specific descriptor that allows you create an instance of a portlet. The *portlet-ref* value must match the *portlet-name* value given in the packaged *portlet.xml* . The *instance-id* value can be named anything, but it must match the *instance-ref* value given in the **-object.xml* file we will explore below.

- helloworld-object.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portal Object 2.6//EN"
   "http://www.jboss.org/portal/dtd/portal-object_2_6.dtd">
<deployments>
   <deployment>
      <parent-ref>default.default</parent-ref>
      <if-exists>overwrite</if-exists>
      <window>
         <window-name>HelloWorldPortletWindow</window-name>
         <instance-ref>HelloWorldPortletInstance</instance-ref>
         <region>center</region>
         <height>1</height>
      </window>
   </deployment>
</deployments>
```

The *-object.xml is responsible for creating/configuring windows, pages, and even portal objects. In our example, we are creating a portlet window, assigning it to a page, and specifying where it should appear on that page. This is a specific descriptor to JBoss Portal. Since 2.6 we can replace also the window section by the following which will do exactly the same.

```
<window>
   <window-name>HelloWorldPortletWindow</window-name>
   <content>
```

```
      <content-type>portlet</content-type>
      <content-uri>HelloWorldPortletInstance</content-uri>
   </content>
   <region>center</region>
   <height>1</height>
</window>
```

The kind of declaration allows to declare for a window different kind of content types. You can see that as a generic way to declare content for a window. In our case the type of content is portlet and the content uri declares the HelloWorldPortletInstance. The content uri value is the identifier of the content. It is possible to declare windows with content type cms and use directly the path to the file in the CMS to make the window show cms content. That behavior is pluggable and it is virtually possible to plug in any kind of content.

- 
```
<parent-ref>default.default</parent-ref>
```

  Tells the portal where this portlet should appear. In this case, *default.default* specifies that this portlet should appear in the portal instance named *default* and the page named *default* .

- 
```
<if-exists>overwrite</if-exists>
```

  Instructs the portal to overwrite or keep this object if it already exists. Possible values are *overwrite* or *keep* . *Overwrite* will destroy the existing object and create a new one based on the content of the deployment. *Keep* will maintain the existing objct deployment or create a new one if it does not yet exist.

- 
```
<window-name>HelloWorldPortletWindow</window-name>
```

  Can be named anything.

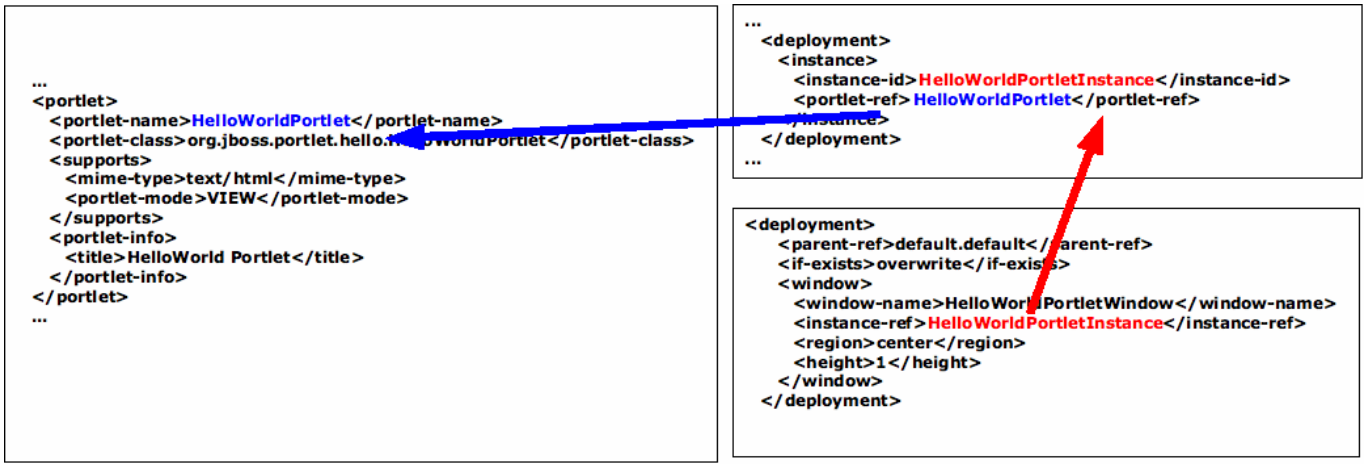
- 
```
<instance-ref>HelloWorldPortletInstance</instance-ref>
```

  The value of *instance-ref* must match the value of *instance-id* found in the *portlet-instances.xml* .

- 
```
<region>center</region>
<height>1</height>
```

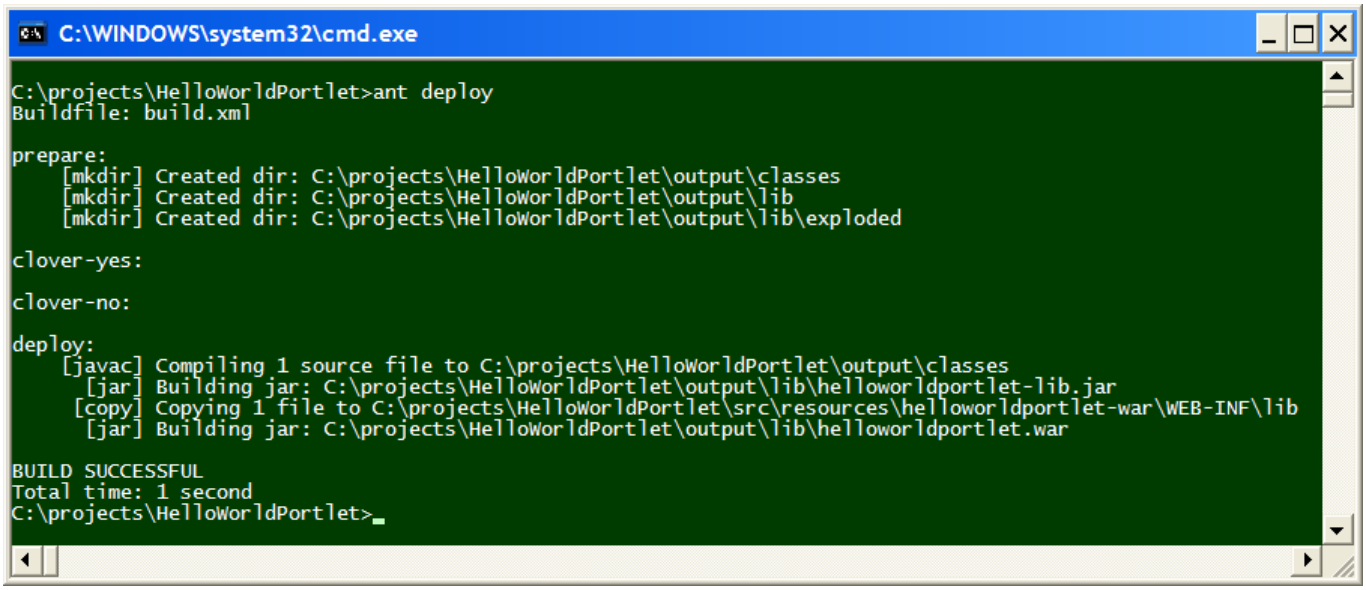
  Specify the layout region and order this window will be found on the portal page.

To illustrate the relationship between the descriptors , we have provided this simple diagram

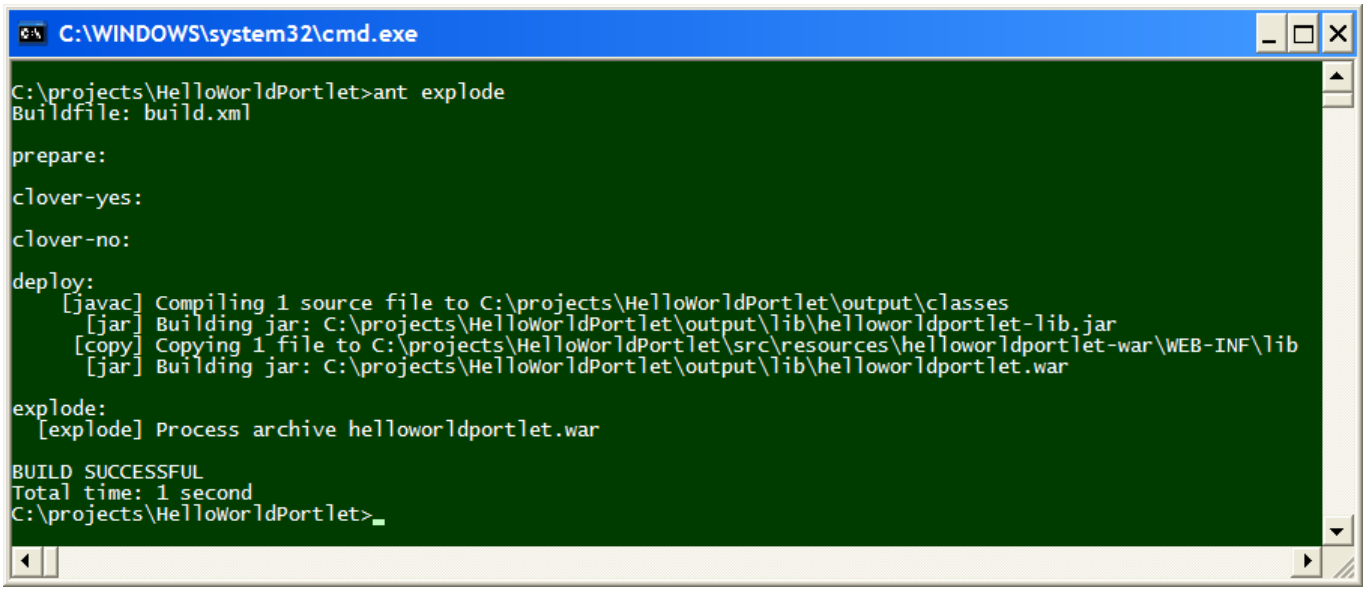


#### 5.2.1.5. Building your portlet

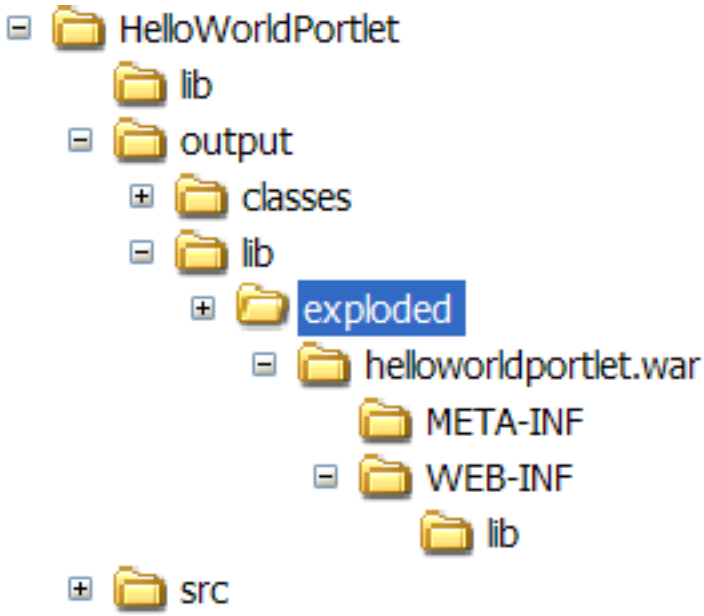
If you have downloaded the sample, you can execute the build.xml with ANT or inside your IDE. Executing the *deploy* target will compile all src files and produce a helloworldportlet.war under *HelloWorldPortlet\helloworldportlet.war*.




If you want to create an expanded war directory, after executing the above deploy target, you should execute the *explode* target.




The above target will produce the following:




This will deflate the helloworldportlet.war, and allow you to deploy it as an expanded directory. It will work just the same, with some additional benefits noted below:

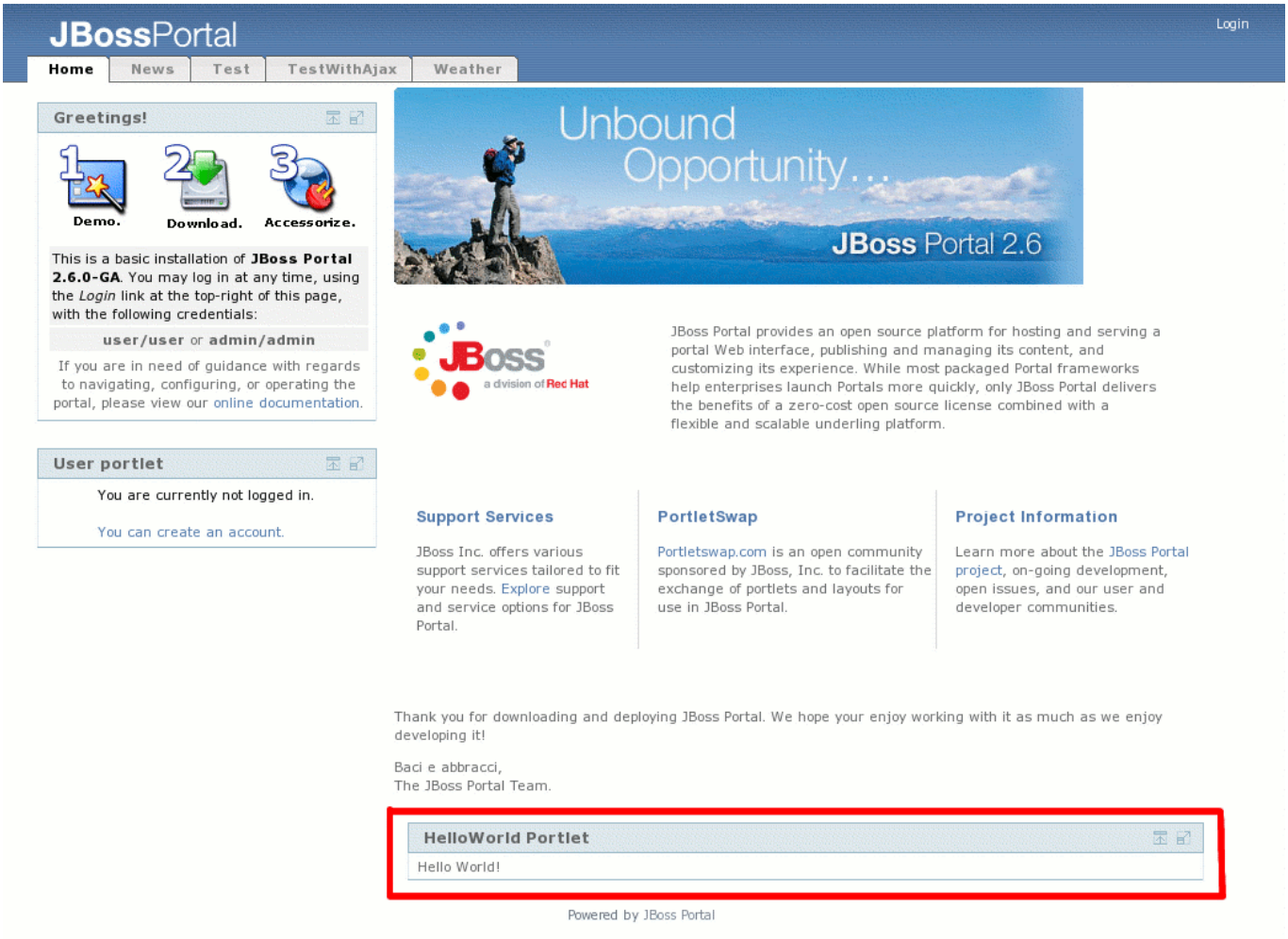
The advantage to expanded war deployments is that you can modify xml descriptors, resource files jsp/jsf pages easily during development. Simply *touch* the web.xml to have JBoss Application Server hot-deploy the web ap-pllication on a live-running server instance

#### 5.2.1.6. Deploying your portlet

Deploying a portlet is as simple as copying/moving the *helloworldportlet.war* in to the server deploy directory. Doing this on a running instance of the portal and application server, will trigger a *hot-deploy* :

```
18:25:56,366 INFO  [Server] JBoss (MX MicroKernel) [4.0.5.GA (build:
             CVSTag=JBoss_4_0_5_GA date=2006000000)] Started in 1m:3s:688ms
18:26:21,147 INFO  [TomcatDeployer] deploy, ctxPath=/helloworldportlet,
             warUrl=.../tmp/deploy/tmp35219helloworldportlet-exp.war/
```

Pointing your browser to http://localhost:8080/portal/ , should yield a view of our HelloWorldPortlet:




## 5.2.2. A Simple JSP Portlet

### 5.2.2.1. Introduction

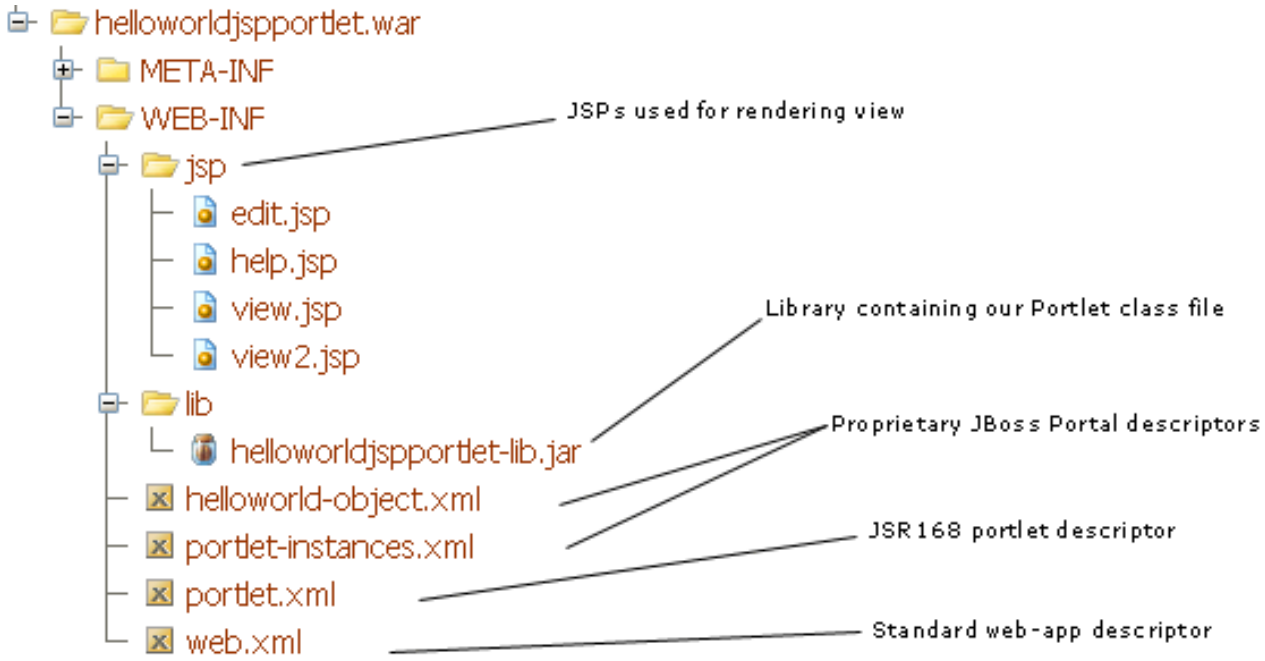
This section will introduce the reader to deploying a simple JSP portlet in JBoss Portal. It requires you download the HelloWorldJSPPortlet from PortletSwap.com, using this link [8] .

This portlet will introduce you to using JSPs for view rendering and the portlet taglib for generating links.

### 5.2.2.2. Package Structure

Portlets are packaged in war files, just like other JEE applications. A typical portlet war file can also include servlets, resource bundles, images, html, jsps, and other static or dynamic files you would commonly include.

[8] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldJSPPortlet.zip




### 5.2.2.3. The Portlet Class

Included in the download bundle [9] you should have one java source file: *HelloWorldPortlet\src\main\org\jboss\portlet\hello\HelloWorldJSPPortlet.java* , and it should contain the following:

```
package org.jboss.portlet.hello;

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;
import java.io.IOException;

public class HelloWorldJSPPortlet extends GenericPortlet
{
   protected void doView(RenderRequest rRequest, RenderResponse rResponse)
                     throws PortletException, IOException, UnavailableException
   {
      rResponse.setContentType("text/html");

      String sYourName = (String) rRequest.getParameter("yourname");

      if(sYourName != null)
      {
         rRequest.setAttribute("yourname", sYourName);
         PortletRequestDispatcher prd = getPortletContext()
            .getRequestDispatcher("/WEB-INF/jsp/view2.jsp");
         prd.include(rRequest, rResponse);
      }
      else
      {
         PortletRequestDispatcher prd = getPortletContext()
            .getRequestDispatcher("/WEB-INF/jsp/view.jsp");
         prd.include(rRequest, rResponse);
      }
```

[9] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldJSPPortlet.zip

```
   }

   public void processAction(ActionRequest aRequest, ActionResponse aResponse)
                  throws PortletException, IOException, UnavailableException
   {
      String sYourname = (String) aRequest.getParameter("yourname");

      // do something

      aResponse.setRenderParameter("yourname", sYourname);
   }

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

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

Now lets look at some of our methods:

- ```
  protected void doHelp(RenderRequest rRequest, RenderResponse rResponse) { ... }

  // And

  protected void doEdit(RenderRequest rRequest, RenderResponse rResponse) { ... }
  ```

  Support for these Modes must be declared in the portlet.xml. They will be triggered when a user clicks on the respective icons in the portlet window titlebar, or through generated links within the portlet.

- ```
  public void processAction(ActionRequest aRequest, ActionResponse aResponse)
                 throws PortletException, IOException, UnavailableException
  {
     String sYourname = (String) aRequest.getParameter("yourname");

     // do something

     aResponse.setRenderParameter("yourname", sYourname);
  }
  ```

  This method will be triggered upon clicking on an ActionURL from our view.jsp. It will retrieve *yourname* from the HTML form, and pass it along as a renderParameter to the doView().

- ```
  rResponse.setContentType("text/html");
  ```

  Just like in the servlet-world, you must declare what content-type the portlet will be responding in.

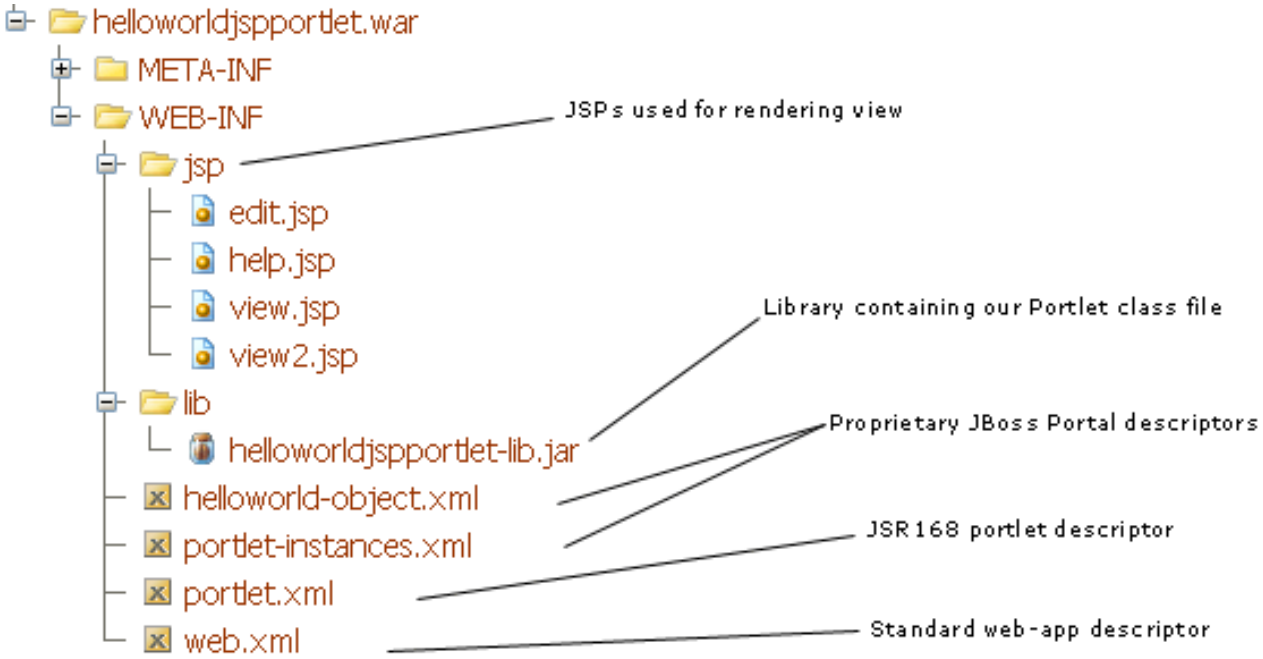
- ```
  protected void doView(RenderRequest rRequest, RenderResponse rResponse)
  ```

```
                throws PortletException, IOException, UnavailableException
```

In this case, our doView, is responsible for dispatching to the appropriate jsp *view.jsp* or *view2.jsp* , depending on the existence of the *yourname* parameter passed in from the *processAction* .

#### 5.2.2.4. The Application Descriptors

JBoss Portal requires certain descriptors be included in your portlet war, for different reasons. Some of these descriptors are defined by the Portlet Specification, and some are specific to JBoss Portal. For brevity, we only discuss the *portlet.xml* descriptor here. For discussion on the other descriptors, please view Section 5.2.1.4 or the chapter on descriptors: Section 6.2 .




- portlet.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd
                                 http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             version="1.0">
   <portlet>
      <portlet-name>HelloWorldJSPPortlet</portlet-name>
      <portlet-class>org.jboss.portlet.hello.HelloWorldJSPPortlet</portlet-class>
      <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>HelloWorld JSP Portlet</title>
      </portlet-info>
   </portlet>
</portlet-app>
```

This file must adhere to its definition in the Portlet Specification. You may define more than one portlet applic-

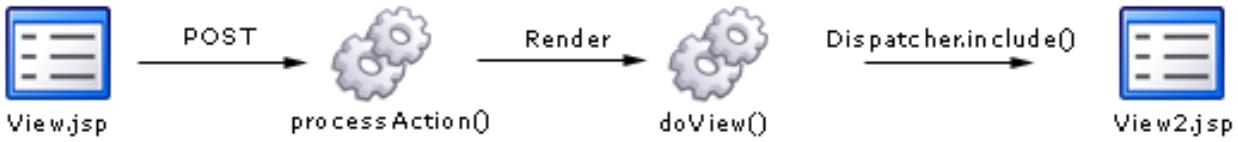
ation in this file.

### Note

This sample portlet supports 3 view modes: VIEW, EDIT, and HELP. The supported modes must be declared in the *portlet.xml* using the *portlet-mode* tag. .

#### 5.2.2.5. JSP files and the portlet taglib

Of importance in this tutorial are the two view jsps. The first, allows the user to input his name, which is then posted to the *processAction* method in our portlet class, set as a *renderParameter* , then the render method is invoked (in our case its the *doView* , which then dispatches to our *view2.jsp* .

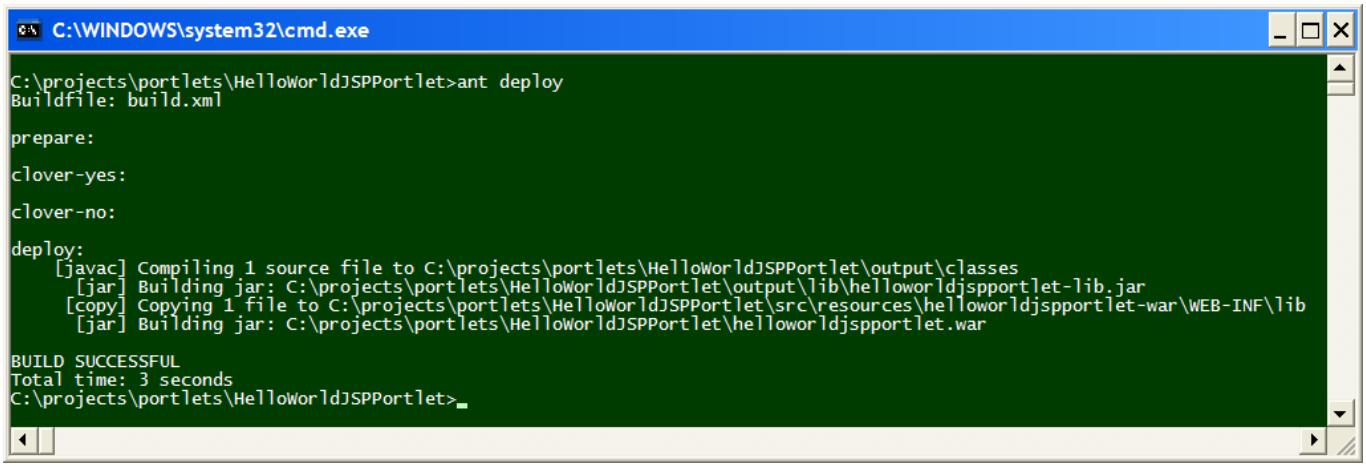
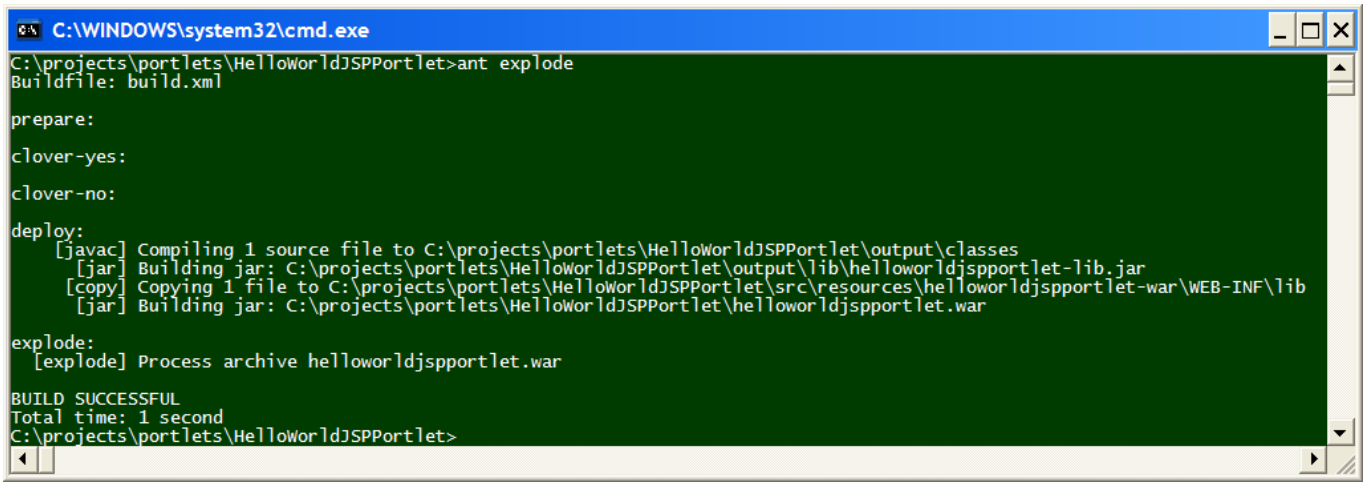


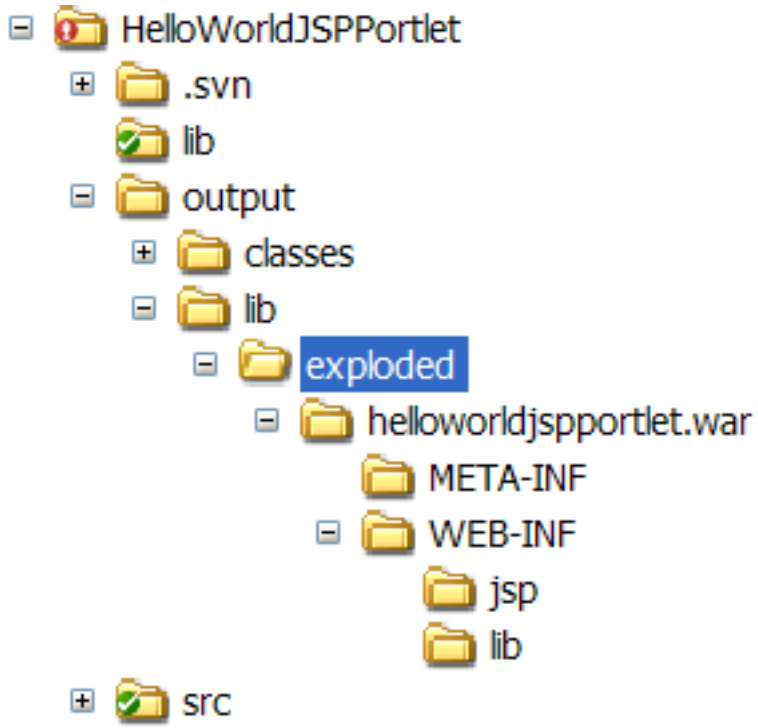

Now lets have a look at our *view.jsp* :

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

<portlet:defineObjects/>

<div align="center">
   This is a simple HelloWorld JSP Portlet. Type in a name and it will dispatch
   to the view2.jsp to print out your name.
   <br/>

   <form action="<portlet:actionURL><portlet:param name="page" value="mainview"/>
         </portlet:actionURL>" method="POST">
      Name:<br/>
      <input type="text" name="yourname"/>
   </form>
   <br/>
   You can also link to other pages, using a renderURL, like <a
      href="<portlet:renderURL><portlet:param name="yourname" value="Roy Russo">
            </portlet:param></portlet:renderURL>">this</a>.
</div>
```

- ```
  <%@ taglib uri="http://java.sun.com/portlet" prefix="portlet" %>
  ```
  Define the portlet taglib. You do not need to bundle the portlet taglib, JBoss Portal will handle that for you.

- ```
  <portlet:defineObjects/>
  ```
  Calling *defineObjects* creates implicit objects in this jsp, that you can access, like: *renderRequest, actionRequest, portletConfig* .

- ```
  <form action="<portlet:actionURL><portlet:param name="page" value="mainview"/>
        </portlet:actionURL>" method="POST">
  ```
  We create an HTML form, but generate the URL it will post to, using the portlet tag library. In this case, notice
  ```

how we are creating an *actionURL* , which will activate out *processAction* method, passing in any input parameters in the form.

- ```
  <a href="<portlet:renderURL><portlet:param name="yourname" value="Roy Russo">
  </portlet:param></portlet:renderURL>">
  ```

  Likewise, we are able to create a link to our *doView* , by simply creating it with a *renderURL* , that passes in our *yourname* parameter.

#### 5.2.2.6. Building your portlet

If you have downloaded the sample, you can execute the build.xml with ANT or inside your IDE. Executing the *deploy* target will compile all src files and produce a helloworldportlet.war under *HelloWorldPortlet\helloworldjspportlet.war*.




If you want to create an expanded war directory, after executing the above deploy target, you should execute the *explode* target.




The above target will produce the following:
  ```




This will deflate the helloworldjspportlet.war, and allow you to deploy it as an expanded directory. It will work just the same, with some additional benefits noted below:

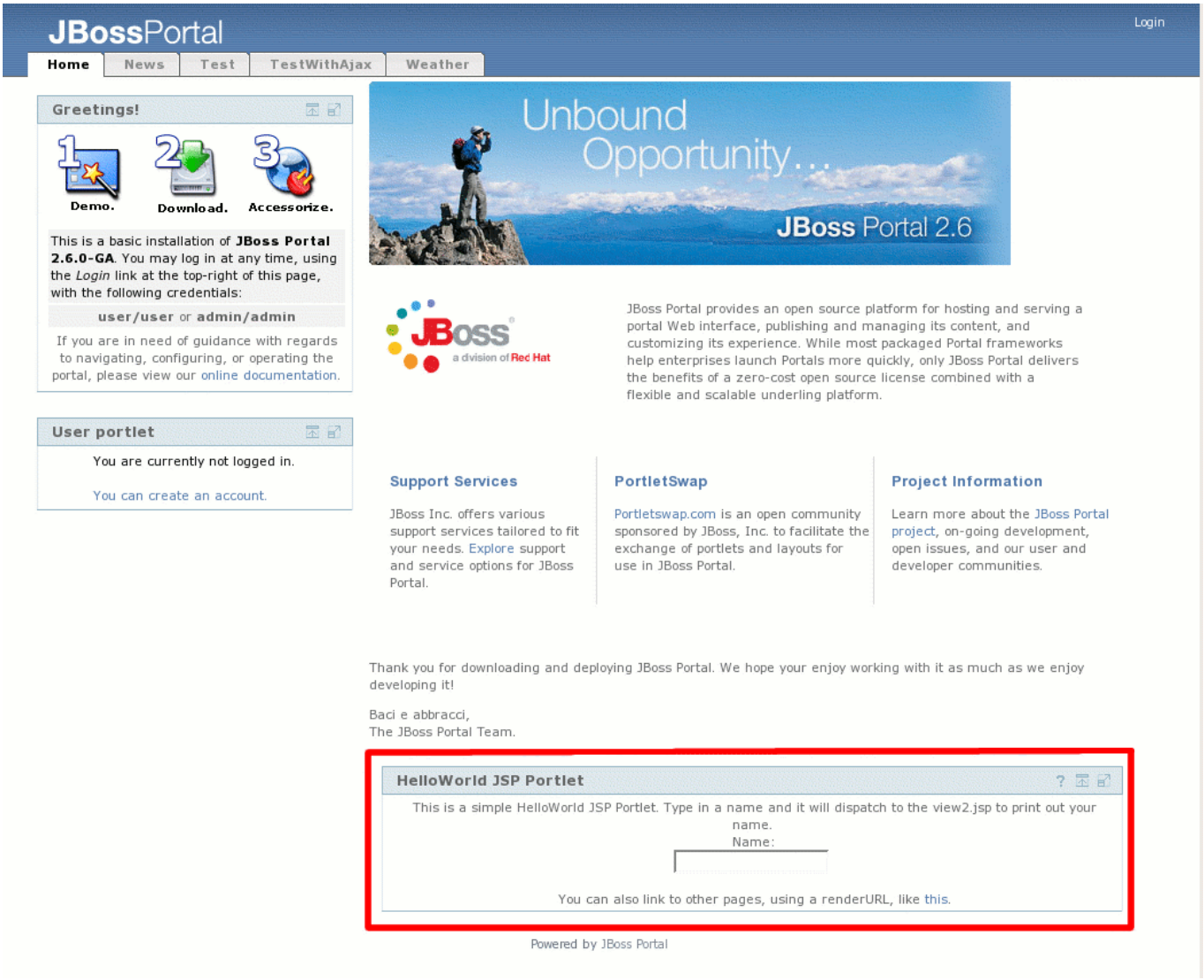
The advantage to expanded war deployments is that you can modify xml descriptors, resource files jsp/jsf pages easily during development. Simply *touch* the web.xml to have JBoss Application Server hot-deploy the web ap-pllication on a live-running server instance

#### 5.2.2.7. Deploying your portlet

Deploying a portlet is as simple as copying/moving the *helloworldjspportlet.war* in to the server deploy directory. Doing this on a running instance of the portal and application server, will trigger a *hot-deploy* :

```
15:54:34,234 INFO  [Server] JBoss (MX MicroKernel) [4.0.5.GA (build:
                   CVSTag=JBoss_4_0_5_GA date=2006000000)]
                   Started in 1m:9s:766ms
15:55:04,062 INFO  [TomcatDeployer] deploy, ctxPath=/helloworldjspportlet,
                   warUrl=.../tmp/deploy/tmp57782helloworldjspportlet-exp.war/
```

Pointing your browser to http://localhost:8080/portal/ , should yield a view of our HelloWorldPortlet:




## 5.2.3. A Simple JSF Portlet

### 5.2.3.1. Introduction

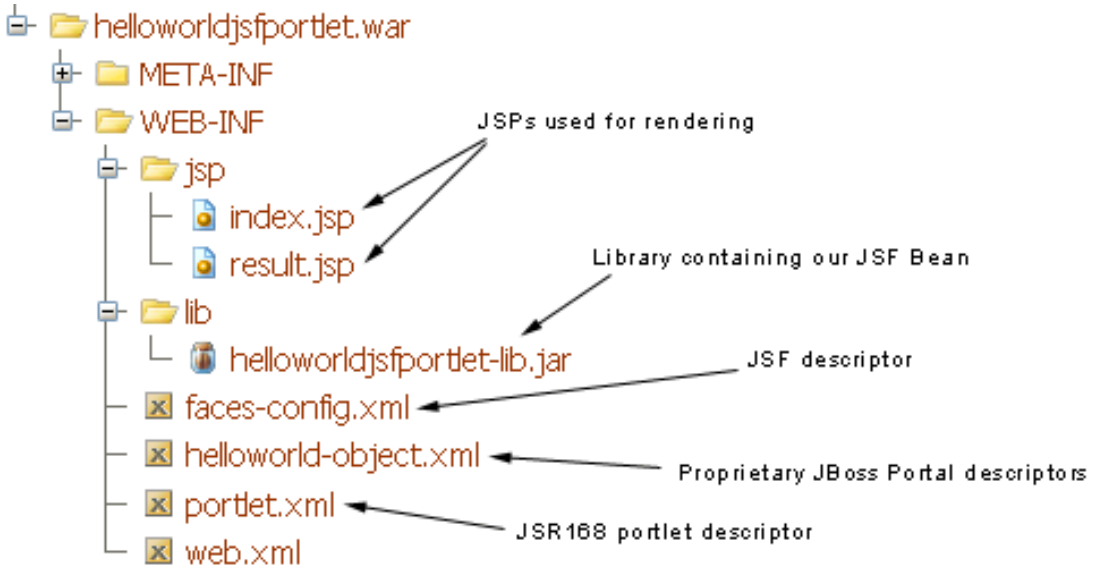
This section will introduce the reader to deploying a simple JSF portlet in JBoss Portal. It requires you download the HelloWorldJSFPortlet from PortletSwap.com, using this link [11] .

This portlet will introduce you to leveraging the JSF framework in portlet development.

### 5.2.3.2. Package Structure

Portlets are packaged in war files, just like other JEE applications. A typical portlet war file can also include servlets, resource bundles, images, html, jsps, and other static or dynamic files you would commonly include.

[11] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldJSFPortlet.zip



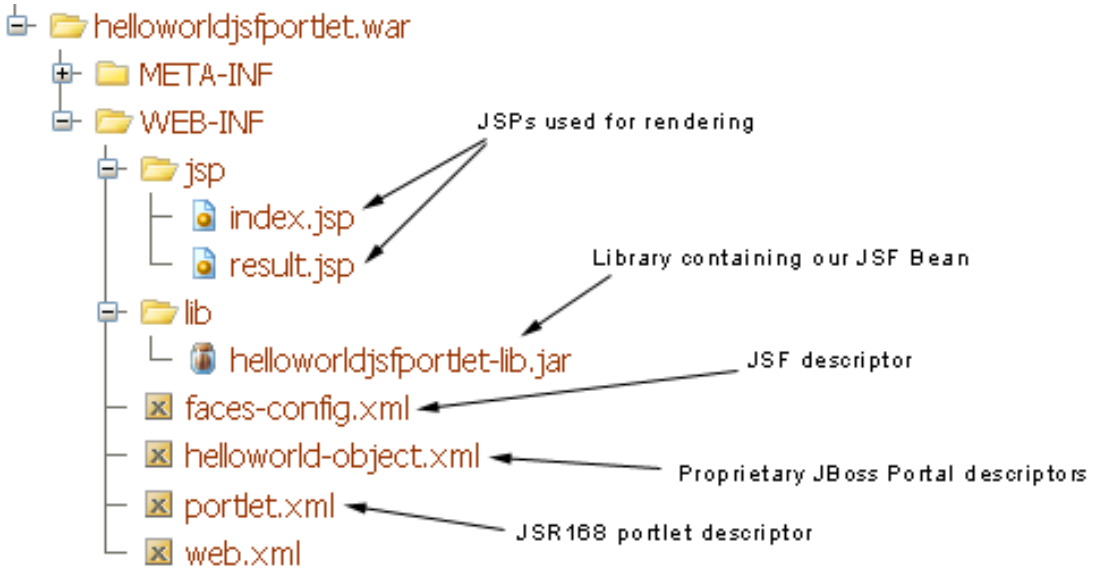

Like a typical JSF application, we also package our faces-config.xml that defines our managed-beans, converters, validators, navigation rules, etc...

## Note

When deploying on JBoss Application Seever, you do not need to package the myfaces libraries with your portlet application. JBoss AS already bundles these libraries by default under *JBOSS_HOME/server/default/deploy/jbossweb-tomcat55.sar/jsf-libs/*

### 5.2.3.3. The Application Descriptors

JBoss Portal requires certain descriptors be included in your portlet war, for different reasons. Some of these descriptors are defined by the Portlet Specification, and some are specific to JBoss Portal. For brevity, we only discuss the *portlet.xml* and *faces-config.xml* descriptors here. For discussion on the other descriptors, please view Section 5.2.1.4 or the chapter on descriptors: Section 6.2 .




- portlet.xml

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<portlet-app xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
             xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd
                                 http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
             version="1.0">
   <portlet>
      <portlet-name>HelloWorldJSFPortlet</portlet-name>
      <portlet-class>org.apache.myfaces.portlet.MyFacesGenericPortlet</portlet-class>
      <init-param>
         <name>default-view</name>
         <value>/WEB-INF/jsp/index.jsp</value>
      </init-param>
      <supports>
         <mime-type>text/html</mime-type>
         <portlet-mode>VIEW</portlet-mode>
      </supports>
      <portlet-info>
         <title>HelloWorld JSF Portlet</title>
      </portlet-info>
   </portlet>
</portlet-app>
```

This file must adhere to its definition in the Portlet Specification. You may define more than one portlet application in this file. Now lets look at the portions that deal with our use of JSF:

- Here we define our portlet class, as we normally would. However, note the use of the MyFacesGenericPortlet. In this case, we will allow the MyFacesGenericPortlet to handle all requests/responses from our users:

```
<portlet-class>org.apache.myfaces.portlet.MyFacesGenericPortlet</portlet-class>
```

## Note

If you wanted to add more functionality to your JSF portlet, not included in the MyFacesGenericPortlet, you could sublass it and create your own Class.

- We need to initialize the portlet with a default view page for it to render, much like a welcome page:

```
<init-param>
   <name>default-view</name>
   <value>/WEB-INF/jsp/index.jsp</value>
</init-param>
```

- faces-config.xml

```
<?xml version="1.0"?>
<!DOCTYPE faces-config PUBLIC
   "-//Sun Microsystems, Inc.//DTD JavaServer Faces Config 1.0//EN"
   "http://java.sun.com/dtd/web-facesconfig_1_0.dtd">
<faces-config>
   <managed-bean>
      <description>Basic UserBean</description>
      <managed-bean-name>user</managed-bean-name>
      <managed-bean-class>org.jboss.portlet.hello.bean.User</managed-bean-class>
      <managed-bean-scope>session</managed-bean-scope>
   </managed-bean>
   <navigation-rule>
      <navigation-case>
         <from-outcome>done</from-outcome>
         <to-view-id>/WEB-INF/jsp/result.jsp</to-view-id>
      </navigation-case>
```

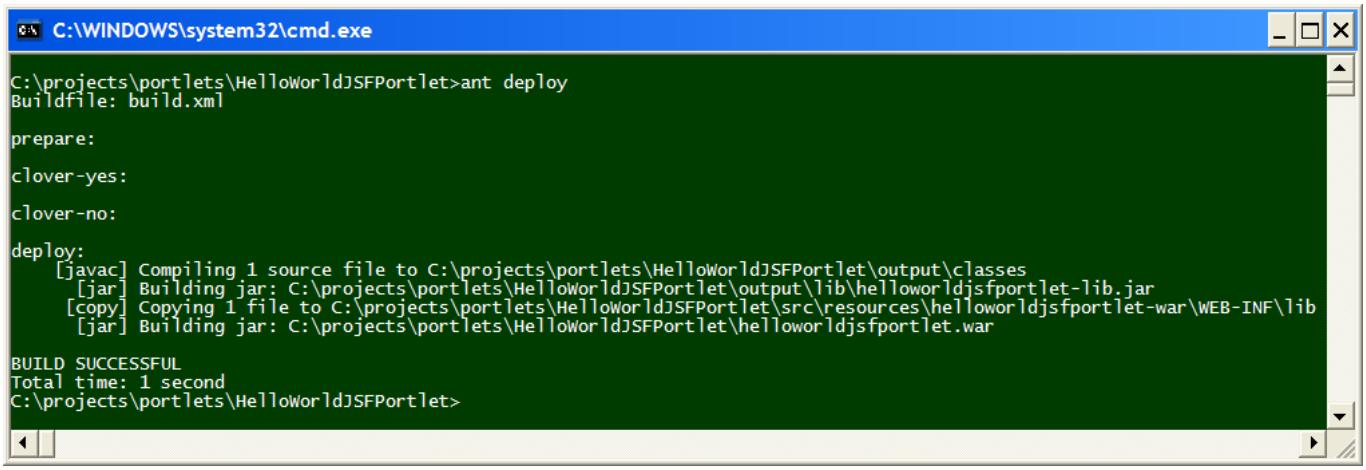
```
   </navigation-rule>
</faces-config>
```

There is nothing special about the faces-config.xml included here. This application would work just as well outside of a portlet as it would inside a portlet container. In the above lines, we define a basic User Bean and a navigation rule to handle the submittal of the original form on the index.jsp.

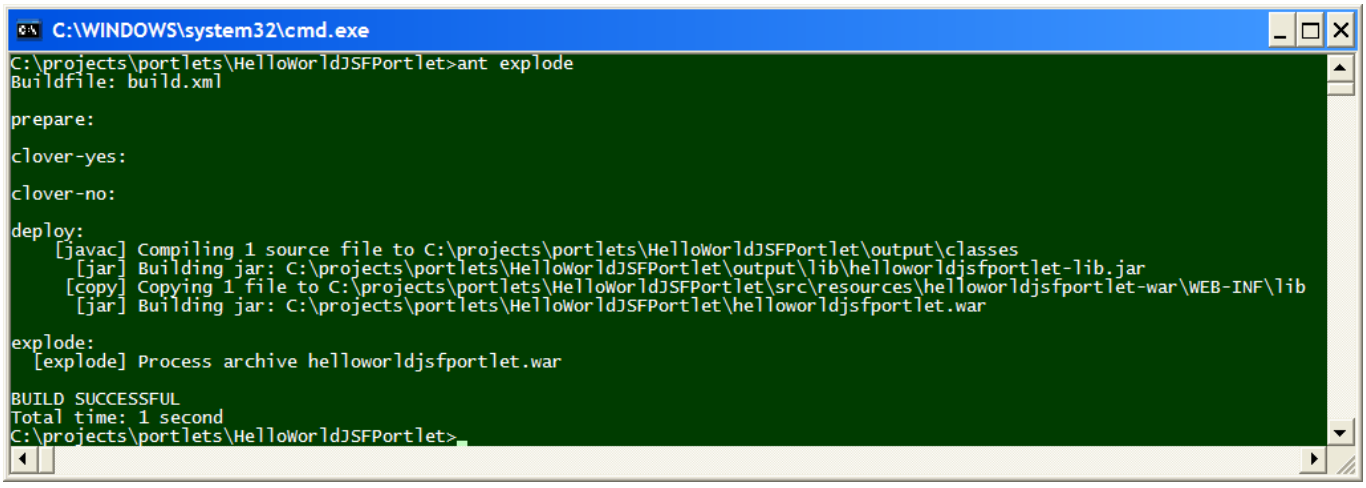
#### 5.2.3.4. The JSP files

#### 5.2.3.5. Building your portlet

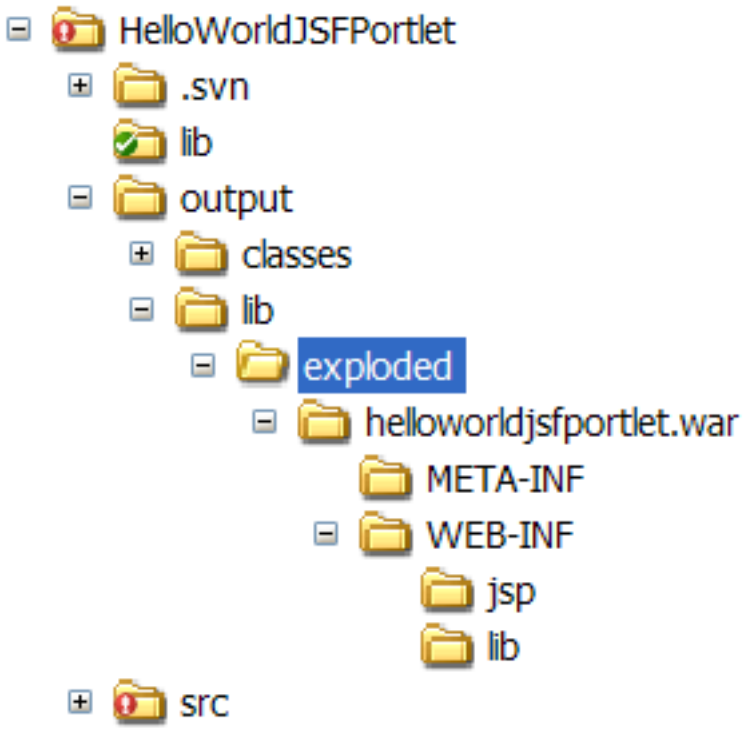
If you have downloaded the sample, you can execute the build.xml with ANT or inside your IDE. Executing the *deploy* target will compile all src files and produce a helloworldjsfportlet.war under *HelloWorldJSFPortlet\helloworldjsfportlet.war*.




If you want to create an expanded war directory, after executing the above deploy target, you should execute the *explode* target.




The above target will produce the following:




This will deflate the helloworldjsfportlet.war, and allow you to deploy it as an expanded directory. It will work just the same, with some additional benefits noted below:

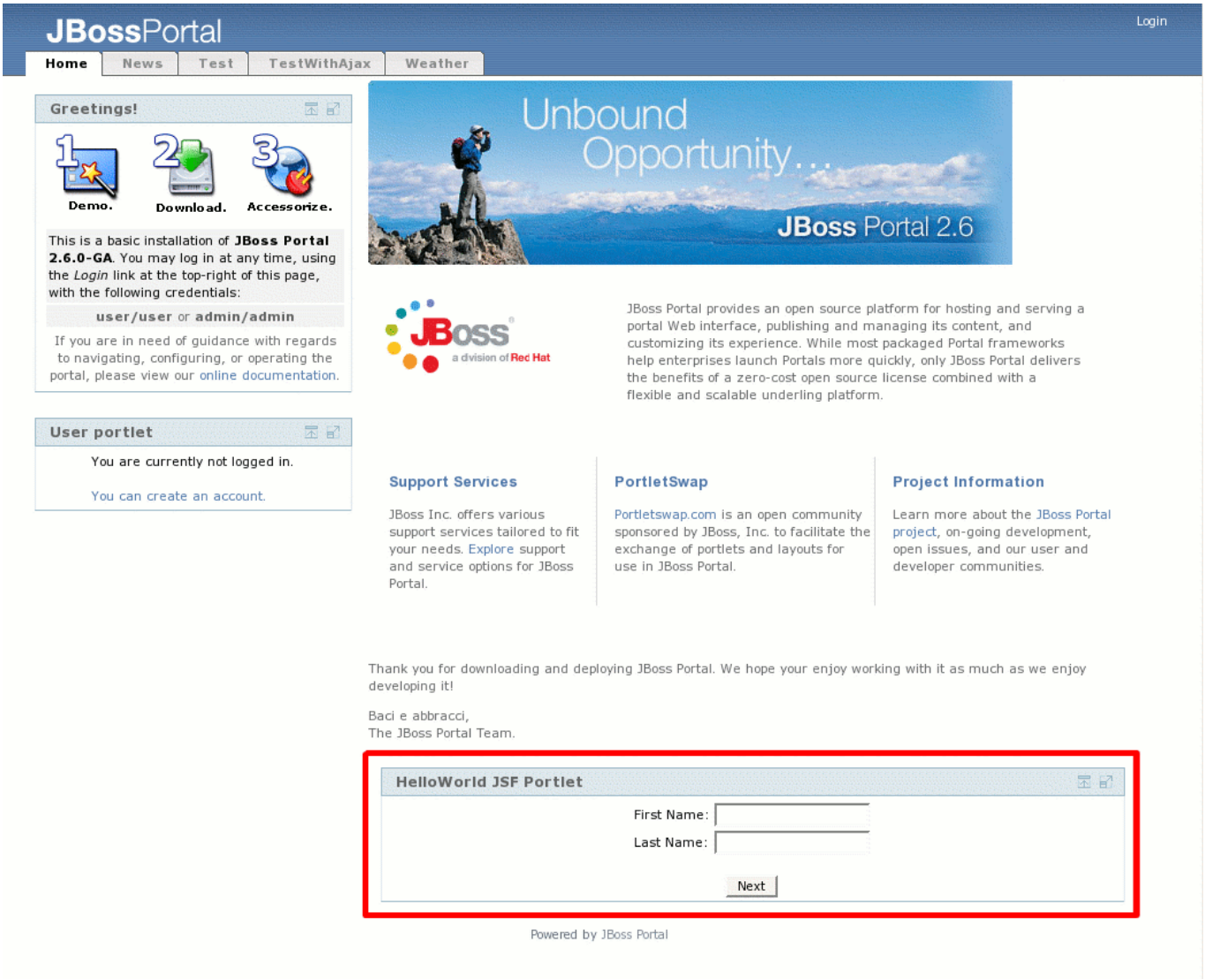
The advantage to expanded war deployments is that you can modify xml descriptors, resource files jsp/jsf pages easily during development. Simply *touch* the web.xml to have JBoss Application Server hot-deploy the web application on a live-running server instance

#### 5.2.3.6. Deploying your portlet

Deploying a portlet is as simple as copying/moving the *helloworldjsfportlet.war* in to the server deploy directory. Doing this on a running instance of the portal and application server, will trigger a *hot-deploy* :

```
22:30:03,093 INFO  [TomcatDeployer] deploy, ctxPath=/helloworldjsfportlet,
                   warUrl=.../tmp/deploy/tmp5571helloworldjsfportlet-exp.war/
22:30:03,312 INFO  [FacesConfigurator] Reading standard config
                   org/apache/myfaces/resource/standard-faces-config.xml
22:30:03,390 INFO  [FacesConfigurator] Reading config
                   jar:file:/C:/jboss-4.0.5.GA/server/default/tmp/deploy/
                   tmp5504jboss-portal.sar-contents/lib/jsf-facelets.jar!/
                   META-INF/faces-config.xml
22:30:03,406 INFO  [FacesConfigurator] Reading config jar:file:/C:/jboss-4.0.5.GA/
                   server/default/tmp/deploy/tmp5504jboss-portal.sar-contents/
                   lib/tomahawk.jar!/META-INF/faces-config.xml
22:30:03,468 INFO  [FacesConfigurator] Reading config /WEB-INF/faces-config.xml
22:30:03,484 ERROR [LocaleUtils] Locale name null or empty, ignoring
22:30:03,640 INFO  [MyFacesGenericPortlet] PortletContext 'C:\jboss-4.0.5.GA\server\
                   default\.\tmp\deploy\tmp5571helloworldjsfportlet-exp.war\'
                   initialized.
```

Pointing your browser to http://localhost:8080/portal/ , should yield a view of our HelloWorldJSFPortlet:


JBossPortal
Login
Home
News
Test
TestWithAjax
Weather
Greetings!
Demo.
Download.
Accessorize.
This is a basic installation of JBoss Portal 2.6.0-GA. You may log in at any time, using the Login link at the top-right of this page, with the following credentials:
user/user or admin/admin
If you are in need of guidance with regards to navigating, configuring, or operating the portal, please view our online documentation.
User portlet
You are currently not logged in.
You can create an account.
Unbound Opportunity...
JBoss Portal 2.6
JBoss
a division of Red Hat
JBoss Portal provides an open source platform for hosting and serving a portal Web interface, publishing and managing its content, and customizing its experience. While most packaged Portal frameworks help enterprises launch Portals more quickly, only JBoss Portal delivers the benefits of a zero-cost open source license combined with a flexible and scalable underling platform.
Support Services
JBoss Inc. offers various support services tailored to fit your needs. Explore support and service options for JBoss Portal.
PortletSwap
Portletswap.com is an open community sponsored by JBoss, Inc. to facilitate the exchange of portlets and layouts for use in JBoss Portal.
Project Information
Learn more about the JBoss Portal project, on-going development, open issues, and our user and developer communities.
Thank you for downloading and deploying JBoss Portal. We hope your enjoy working with it as much as we enjoy developing it!
Baci e abbracci,
The JBoss Portal Team.
HelloWorld JSF Portlet
First Name:
Last Name:
Next
Powered by JBoss Portal

# 6

# XML Descriptors

**Roy Russo** <roy@jboss.org>

## 6.1. Changes since previous releases

The previous releases of JBoss Portal did not have an external schema to validate the various XML descriptors although it was internally validated by the portal. Since 2.6 we have worked on providing Document Type Definition (DTD) for the various descriptors. The DTD validation will be only effective if you XML descriptors declares it like that:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE deployments PUBLIC
"-//JBoss Portal//DTD Portal Object 2.6//EN"
"http://www.jboss.org/portal/dtd/portal-object_2_6.dtd">
...
```

If you do not perform the declaration then the previous mechanism will be used. The main difference between using the DTD and not is that the additional DTD validation is more strict specifically on the order of the XML elements. The following example will be accepted without the DTD declaration and will not with the DTD declaration:

```
<?xml version="1.0" encoding="UTF-8"?>
<deployment>
   <if-exists>overwrite</if-exists>
   <parent-ref>default.default</parent-ref>
   ...
</deployment>
```

The correct descriptor is rather:

```
<?xml version="1.0" encoding="UTF-8"?>
<deployment>
   <parent-ref>default.default</parent-ref>
   <if-exists>overwrite</if-exists>
   ...
</deployment>
```

The various DTD available are:

- For -object.xml descriptors: "-//JBoss Portal//DTD Portal Object 2.6//EN"
- For jboss-app.xml descriptors: "-//JBoss Portal//DTD JBoss Web Application 2.6//EN"

- For jboss-portlet.xml descriptors: "-//JBoss Portal//DTD JBoss Portlet 2.6//EN"
- For portlet-instances.xml descriptors: "-//JBoss Portal//DTD Portlet Instances 2.6//EN"

Those files are available in the *jboss-portal.sar/dtd/* folder

### 6.1.1. JBoss Portlet DTD

- Element <!ELEMENT portlet-app (remotable?,portlet*,service*)>

```
The remotable element is used to configure the default behavior of the portlets with
respect to WSRP exposure.

For each portlet defined in portlet.xml, it is possible to configure specific
settings of the portlet container.

It is also possible to inject services in the portlet context of the application
using the service elements.
```

- Element <!ELEMENT portlet (portlet-name,remotable?,ajax?,session-config?,transaction?,header-content?)>

```
Additional configuration for a portlet.

The portlet-name defines the name of the portlet. It must match a portlet defined already
in portlet.xml of the same web application.

The remotable element configures the portlet exposure to WSRP. If no value is present
then the value considered is either the value defined globally at the portlet
application level or false.

The trans-attribute value specifies the behavior of the portlet when it is invoked at
runtime with respect to the transactionnal context. According to how the portlet is
invoked a transaction may exist or not before the portlet is invoked. Usually in the
local context the portal transaction could be present. By default the value considered is
 NotSupported which means that the portal transaction will be suspended for the duration
 of the portlet invocation.

Example:

<portlet>
   <portlet-name>MyPortlet</portlet-name>
   <remotable>true</remotable>
   <trans-attribute>Required</trans-attribute>
</portlet>
```

- Element <!ELEMENT portlet-name (#PCDATA)>

```
The portlet name.
```

- Element <!ELEMENT remotable (#PCDATA)>

```
The remotable value is used for WSRP exposure. The accepted values are the
litterals true of false.
```

- Element <!ELEMENT ajax (partial-refresh)>

```
The ajax tag allows to configure the ajax capabilities of the portlet. If
the portlet is tagged as partial-refresh then the portal may use partial page
refreshing and render only that portlet. If the portlet partial-refresh value
is false, then the portal will perform a full page refresh when the portlet is refreshed.
```

- Element <!ELEMENT partial-refresh (#PCDATA)>

```
The authorized values for the partial-refresh element are true or false.
```

- Element <!ELEMENT session-config (distributed)>

```
This element configure the portlet session of the portlet.

The distributed element instructs the container to distribute the session attributes
using the portal session replication. It applies only to local portlets are not to
remote portlets. The default value is false.

Example:

<session-config>
   <distributed>true</distributed>
</session-config>
```

- Element <!ELEMENT distributed (#PCDATA)>

```
The authorized values for the distributed element are true or false.
```

- Element <!ELEMENT transaction (trans-attribute)>

```
Defines how the portlet behaves with the transactionnal context. The default value
is Never.

Example:

<transaction>
   <trans-attribute>Required</transaction>
<transaction>
```

- Element <!ELEMENT trans-attribute (#PCDATA)>

```

The trans-attribute value defines the transactionnal behavior. The accepted values
are Required, Mandatory, Never, Supports, NotSupported and RequiresNew.
```

- Element <!ELEMENT header-content (link | script | meta)*>

```
Specify content which should be included in the portal aggregated page when the portlet
is present on that page. This setting only applies when the portlet is used in the local mode.
```

- Element <!ELEMENT link EMPTY>

```
No content is allowed inside an link element.
```

- Element <!ELEMENT script (#PCDATA)>

```
The script header element can contain inline script definitions.
```

- Element <!ELEMENT meta EMPTY>

```
No content is allowed for meta element.
```

- Element <!ELEMENT service (service-name,service-class,service-ref)>

```
Declare a service that will be injected by the portlet container as an
attribute of the portlet context.

Example:

<service>
   <service-name>UserModule</service-name>
   <service-class>org.jboss.portal.identity.UserModule</service-class>
   <service-ref>:service=Module,type=User</service-ref>
</service>

In the portlet it is then possible to use it by doing a lookup on the service
name, for example in the init() lifecycle method :

public void init()
{
   UserModule userModule = (UserModule)getPortletContext().getAttribute("UserModule");
}
```

- Element <!ELEMENT service-name (#PCDATA)>

```
The service name that will be used to bind the service as a portlet context attribute.
```

- Element <!ELEMENT service-class (#PCDATA)>

```
The full qualified name of the interface that the service implements.
```

- Element <!ELEMENT service-ref (#PCDATA)>

```
The reference to the service. In the JMX Microkernel environment it consist of the JMX
name of the service MBean. For an MBean reference if the domain is left out, then the
current domain of the portal will be used.
```

## 6.1.2. Portlet Instance DTD

- Element <!ELEMENT deployments (deployment*)>

```
The deployements element is a container for deployment elements.
```

- Element <!ELEMENT deployment (if-exists?,instance)>

```
The deployment is a container for an instance element.
```

- Element <!ELEMENT if-exists (#PCDATA)>

```
The if-exists element is used to define action to take if instance with such name is
already present. Possible values are overwrite  or keep  . Overwrite  will destroy the
existing object in the database and create a new one, based on the content of the
deployment. Keep  will maintain the existing object deployment or create a new one if
it does not yet exist.
```

- Element <!ELEMENT instance (instance-id,portlet-ref,preferences?,security-constraint?)>

```
The instance element is used to create an instance of a portlet from the portlet
application of the same war file containing the portlet-instances.xml file. The portlet
will be created and configured only if the portlet is present and an instance with
such a name does not already exist.

Example :

<instance>
   <instance-id>MyPortletInstance</instance-id>
   <portlet-ref>MyPortlet</portlet-ref>
   <preferences>
      <preference>
         <name>abc</name>
         <value>def</value>
      </preference>
   </preferences>
   <security-constraint>
      <policy-permission>
         <role-name>User</role-name>
         <action-name>view</action-name>
      </policy-permission>
   </security-constraint>
</instance>
```

- Element <!ELEMENT instance-id (#PCDATA)>

```
The identifier of the instance.
```

- Element <!ELEMENT portlet-ref (#PCDATA)>

```
The reference to the portlet which is its portlet name.
```

- Element <!ELEMENT preferences (preference)>

```
The preferences element configures the instance with a specific set of preferences.
```

- Element <!ELEMENT preference (name,value)>

```
The preference configure one preference of a set of preferences.
```

- Element <!ELEMENT name (#PCDATA)>

```
A name.
```

- Element <!ELEMENT value (#PCDATA)>

```
A string value.
```

- Element <!ELEMENT security-constraint (policy-permission*)>

```
The security-constraint element is a container for policy-permission elements

Examples:

<security-constraint>
    <policy-permission>
       <role-name>User</role-name>
       <action-name>view</action-name>
    </policy-permission>
</security-constraint>

<security-constraint>
    <policy-permission>
       <unchecked/>
       <action-name>view</action-name>
    </policy-permission>
</security-constraint>
```

- Element <!ELEMENT policy-permission (action-name*,unchecked?,role-name*)>

```
The policy-permission element is used to secure a specific portlet instance based on a user's role.
```

- Element <!ELEMENT action-name (#PCDATA)>

```
The action-name element is used to define the access rights given to the role defined.
Possible values are:

    * view - Users can view the page.
    * viewrecursive - Users can view the page and child pages.
    * personalize - Users are able to view AND personalize the page.
    * personalizerecursive - Users are able to view AND personalize the page AND its child
      pages.
```

- Element <!ELEMENT unchecked EMPTY>

```
The unchecked element is used to define (if present) that anyone can view this instance
```

- Element <!ELEMENT role-name (#PCDATA)>

```
The role-name element is used to define a role that this security constraint will apply to

    * <role-name>SOMEROLE</role-name> Access to this instance is limited to the defined role.
```

### 6.1.3. Portal Object DTD

- Element <!ELEMENT deployments (deployment*)>

```
The deployements element is a generic container for deployment elements.
```

- Element <!ELEMENT deployment (parent-ref,if-exists?,(context | portal | page | window))>

```
The deployment is a generic container for portal object elements. The parent-ref
child gives the name of the parent object that the current object will use as parent.
The optional if-exists element define the behavior when a portal object which
an identical name is already child of the parent element. The default behavior of
the if-exist tag is to keep the existing object and not create a new object. The
last element is the portal object itself.

Example:

<deployment>
   <parent-ref>default</parent-ref>
   <page>
      ...
   </page>
</deployment>

All portal objects have a common configuration which can be :

1/ a listener : specifies the id of a listener is the listener registry. A listener
object is able to listen portal events which apply to the portal node hierarchy.

2/ properties : a set of generic properties owned by the portal object. Some
properties can drive the behavior of the object.

3/ security-constraint : defines security configuration of the portal object.
```

- Element <!ELEMENT parent-ref (#PCDATA)>

```
Contains a reference to the parent object. The naming convention for naming object
is to concatenate the names of the path to the object and separate the names by a dot.
If the path is empty then the empty string must be used.

Example:
```

```
<parent-ref/> the root having an empty path

<parent-ref>default</parent-ref> the object with the name default under the root
having the path (default)

<parent-ref>default.default</parent-ref> the object with the path (default,default)
```

- Element <!ELEMENT if-exists (#PCDATA)>

```
The authorized values are overwrite and keep. Overwrite means that the existing
object will be destroyed and the current declaration will be used. Keep means that
the existing object will not be destroyed and no creation hence will be done.
```

- Element <!ELEMENT context (context-name,properties?,listener?,security-constraint?,portal*)>

```
A portal object of type context. A context type represent a node in the tree which
does not have a visual representation. It can exist only under the root. A context can
only have children with the portal type.
```

- Element <!ELEMENT context-name (#PCDATA)>

```
The context name value.
```

- Element <!ELEMENT portal (portal-name,supported-modes,supported-window-states?,properties?,listener?,security-constraint?,page*)>

```

A portal object of type portal. A portal type represents a virtual portal and can
have children of type page. In addition of the common portal object elements it support
also the declaration of the modes and the window states it supports. If no declaration
of modes or window states is done then the default value will be respectively
(view,edit,help) and (normal,minimized,maximized).
```

- Element <!ELEMENT portal-name (#PCDATA)>

```
The portal name value.
```

- Element <!ELEMENT supported-modes (mode*)>

```
The supported modes of a portal.

Example:

<supported-mode>
   <mode>view</mode>
   <mode>edit</mode>
   <mode>help</mode>
</supported-mode>
```

- Element <!ELEMENT mode (#PCDATA)>

```
A portlet mode value.
```

- Element <!ELEMENT supported-window-states (window-state*)>

```
The supported window states of a portal.

Example:

<supported-window-states>
   <window-state>normal</window-state>
   <window-state>minimized</window-state>
   <window-state>maximized</window-state>
</supported-window-states>
```

- Element <!ELEMENT window-state (#PCDATA)>

```
A window state value.
```

- Element <!ELEMENT page (page-name,properties?,listener?,security-constraint?,(page | window)*)>

```
A portal object of type page. A page type represents a page which can have children of
type page and window. The children windows are the windows of the page and the children
pages are the subpages of this page.
```

- Element <!ELEMENT page-name (#PCDATA)>

```
The page name value.
```

- Element <!ELEMENT window (window-name,(instance-ref | content),region,height,properties?,listener?)>

```
A portal object of type window. A window type represents a window. Beside the common
properties a window has a content and belong to a region on the page.

The instance-ref or content tags are used to define the content of the window. The
usage of the content tag is generic and can be used to describe any kind of content.
The instance-ref is a shortcut to define a content type of portlet which points to a
portlet instance.

The region and height defines how the window is placed in the page.
```

- Element <!ELEMENT window-name (#PCDATA)>

```
The window name value.
```

- Element <!ELEMENT instance-ref (#PCDATA)>

```
Define the content of the window as a reference to a portlet instance. The value
is the id of the instance.

Example:

<instance-ref>MyPortletInstance</instance-ref>
```

- Element <!ELEMENT content (content-type,content-uri)>

```
Define the content of the window in a generic manner. The content is define by
the type of the content and an URI which acts as an identificator for the content.

Example:

<content>
   <content-type>portlet</content-type>
   <content-uri>MyPortletInstance</content-uri>
</content>

<content>
   <content-type>cms</content-type>
   <content-uri>/default/index.html</content-uri>
</content>
```

- Element <!ELEMENT content-type (#PCDATA)>

```
The content type of the window.
```

- Element <!ELEMENT content-uri (#PCDATA)>

```
The content URI of the window.
```

- Element <!ELEMENT region (#PCDATA)>

```
The region the window belongs to.
```

- Element <!ELEMENT height (#PCDATA)>

```
The height of the window in the particular region.
```

- Element <!ELEMENT listener (#PCDATA)>

```
Define a listener for a portal object. The value is the id of the listener.
```

- Element <!ELEMENT properties (property*)>

```
A set of generic properties for the portal object.
```

- Element <!ELEMENT property (name,value)>

```
A generic string property.
```

- Element <!ELEMENT name (#PCDATA)>

```
A name value.
```

- Element <!ELEMENT value (#PCDATA)>

```
A value.
```

- Element <!ELEMENT security-constraint (policy-permission*)>

```
The security-constraint element is a container for policy-permission elements

Examples:

<security-constraint>
    <policy-permission>
       <role-name>User</role-name>
       <action-name>view</action-name>
    </policy-permission>
</security-constraint>

<security-constraint>
    <policy-permission>
       <unchecked/>
       <action-name>view</action-name>
    </policy-permission>
</security-constraint>
```

- Element <!ELEMENT policy-permission (action-name*,unchecked?,role-name*)>

```
The policy-permission element is used to secure a specific portal page based on a user's role.
```

- Element <!ELEMENT action-name (#PCDATA)>

```
The role-name element is used to define a role that this security constraint will apply to

    * <role-name>SOMEROLE</role-name> Access to this portal page is limited to the defined role.
```

- Element <!ELEMENT unchecked EMPTY>

```
The unchecked element is used to define (if present) that anyone can view this portal page
```

- Element <!ELEMENT role-name (#PCDATA)>

```
The action-name element is used to define the access rights given to the role defined.
```

```
Possible values are:

    * view - Users can view the page.
```

### 6.1.4. JBoss App DTD

- Element <!ELEMENT jboss-app (app-name?)>

```
<!DOCTYPE jboss-app PUBLIC
   "-//JBoss Portal//DTD JBoss Web Application 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-app_2_6.dtd">
```

- Element <!ELEMENT app-name (#PCDATA)>

```
When a web application is deployed, the context path under wich it is deployed
is taken as application name. The application name value in this descriptor is
used to override it. When a component references a references a portlet, it needs to
reference the application too and if the portlet application war file is renammed
the reference is not valid anymore. Therefore this tag is used to have an application
name that does not depend upon the context path under which the application is deployed.
```

## 6.2. Portlet Descriptors

To define your portal objects (portals, pages, portlet instances, windows, and portlets), you will be using the descriptors found in this section. This section seeks to describe these descriptors. It is recommended you also look at Section 5.2 and Section 6.4 for samples on how they are used within a portlet application.

### 6.2.1. *-object.xml

The *-object.xml file is used to define: portal instances, pages, windows, window layout. Additionally, you can also specify the themes and layouts used for specific portal instances, pages, and windows. The description below, only defines a portlet window being added to the default page in the default portal. For advanced functionality, using this descriptor, please read Section 6.4 .

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portal Object 2.6//EN"
   "http://www.jboss.org/portal/dtd/portal-object_2_6.dtd">
<deployments>
   <deployment>
      <parent-ref>default.default</parent-ref>
      <if-exists>overwrite</if-exists>
      <window>
         <window-name>HelloWorldJSPPortletWindow</window-name>
         <instance-ref>HelloWorldJSPPortletInstance</instance-ref>
         <region>center</region>
         <height>1</height>
```

```
      </window>
   </deployment>
</deployments>
```

- `<deployments>...</deployments>`

  The *deployments* tag, encapsulates the entire document. You may specify more than one deployment within this tag.

- `<deployment>...</deployment>`

  The *deployment* tag is used to specify object deployments: portals, pages, windows, etc...

- `<if-exists>...</if-exists>`

  Possible values are *overwrite* or *keep* . *Overwrite* will destroy the existing object in the database and create a new one, based on the content of the deployment. *Keep* will maintain the existing object deployment or create a new one if it does not yet exist.

- `<parent-ref>...</parent-ref>`

  The *parent-ref* tag specifies where a particulare object will exist within the portal object tree. In our example, above, we are defining a window and assigning it to *default.default* , interpreted, this means the window will appear in the default portal and the default page within it.

- `<window>...</window>`

  Used to define a portlet window. You will then need to assign to this window, a portlet instance and assign it to a layout region.

- `<window-name>...</window-name>`

  A **unique name** given to this portlet window.

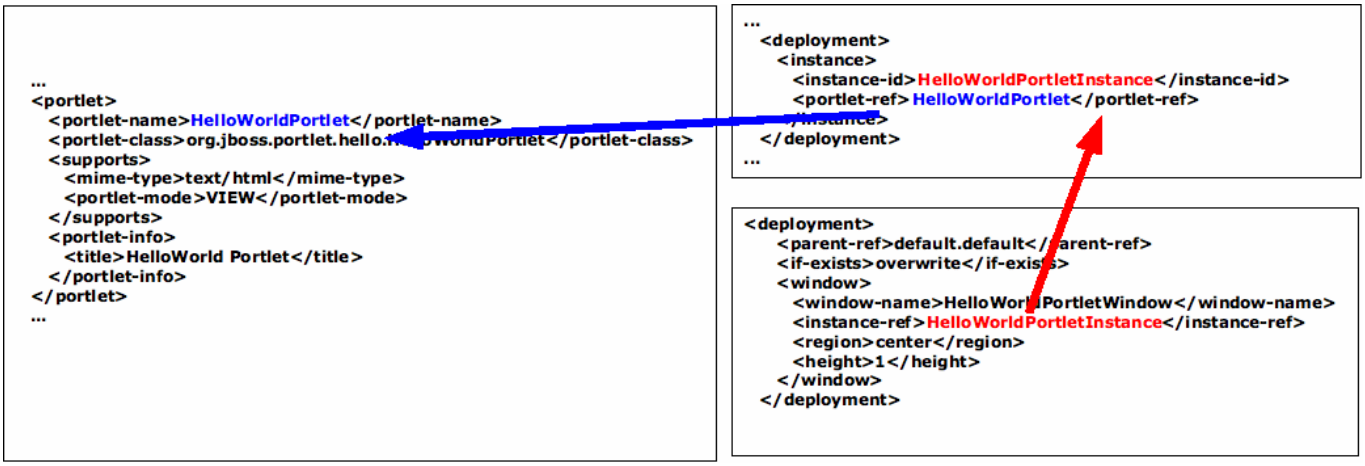
- `<instance-ref>...</instance-ref>`

  The portlet instance that this window will represent. It must correspond to the value of *instance-id* , assigned in your *portlet-instances.xml*

- `<region>...</region><height>...</height>`

  The values are used to specify where this window will appear within the page layout. *Region* often depends on regions defined in your layout. *Height* can be any number between 0-X.

The example *-object.xml, above, makes reference to items found in other descriptor files. To help with this topic, we have included a sample image that depicts the relationship:




## 6.2.2. portlet-instances.xml

This is a JBoss Portal specific descriptor that allows a developer to instantiate one-or-many instances of one-or-many portlets. The benefit of using this technique, is to allow one portlet to be instantiated several times with different preference parameters.

### Note

*Is this descriptor mandatory?* Technically, no, as you can deploy your portlet without this descriptor AND without the *-object.xml and then use the management portlet to create instances, assign the instances to windows, and then assign the windows to pages.

Our example, below, has us instantiating two separate instances of the *NewsPortlet* with different preference parameters, one instance will draw a feed for RedHat announcements and the other from McDonalds announcements.

```
<?xml version="1.0" standalone="yes"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portlet Instances 2.6//EN"
   "http://www.jboss.org/portal/dtd/portlet-instances_2_6.dtd">
<deployments>
   <deployment>
      <instance>
         <instance-id>NewsPortletInstance2</instance-id>
         <portlet-ref>NewsPortlet</portlet-ref>
         <preferences>
            <preference>
               <name>expires</name>
               <value>180</value>
            </preference>
            <preference>
               <name>RssXml</name>
               <value>http://finance.yahoo.com/rss/headline?s=rhat</value>
            </preference>
         </preferences>
         <security-constraint>
            <policy-permission>
               <action-name>view</action-name>
               <unchecked/>
            </policy-permission>
         </security-constraint>
      </instance>
   </deployment>
   <deployment>
      <instance>
         <instance-id>NewsPortletInstance2</instance-id>
```

```
         <portlet-ref>NewsPortlet</portlet-ref>
         <preferences>
            <preference>
               <name>expires</name>
               <value>180</value>
            </preference>
            <preference>
               <name>RssXml</name>
               <value>http://finance.yahoo.com/rss/headline?s=mcd</value>
            </preference>
         </preferences>
         <security-constraint>
            <policy-permission>
               <action-name>view</action-name>
               <unchecked/>
            </policy-permission>
         </security-constraint>
      </instance>
   </deployment>
</deployments>
```

- `<deployments>...</deployments>`

  The *deployments* tag, encapsulates the entire document. You may specify more than one portlet instance deployment, within this tag.

- `<deployment><instance>...</instance></deployment>`

  The *deployment* , and embedded *instance* tags are used to specify one portlet instance.

- `<instance-id>...</instance-id>`

  A **unique name** given to this instance of the portlet. It must correspond to the value of *instance-ref* , assigned to the window in your **-object.xml* .

- `<portlet-ref>...</portlet-ref>`

  The portlet that this instance will represent. It must correspond to the value of *portlet-name* , assigned in your *portlet.xml* .

- `<preferences><preference>...</preference></preferences>`

  Preferences for this portlet instance are defined here, as type String, in a key-value pair style. It is also possible to specify preferences as type String[], as in:

```
<preferences>
   <preference>
      <name>fruit</name>
      <value>apple</value>
      <value>orange</value>
      <value>kiwi</value>
   </preference>
</preferences>
```

-

```
<security-constraint>
   <policy-permission>
      <action-name>viewrecursive</action-name>
      <unchecked/>
   </policy-permission>
</security-constraint>
```

The security contraint portion is worth taking a look at, in an isolated fashion. It allows you to secure a specific portlet instance based on a user's role.

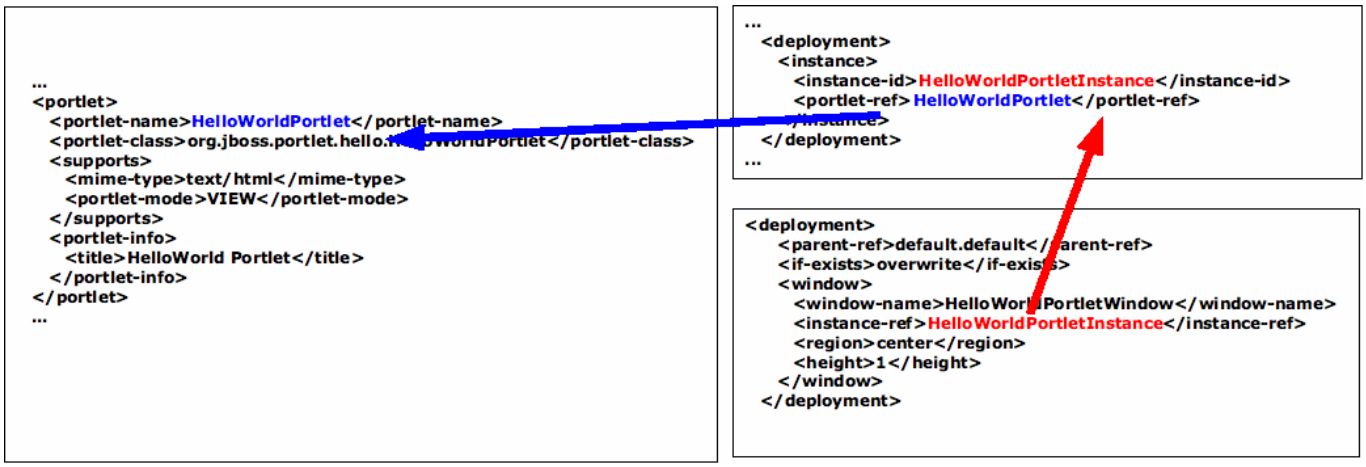
**Role definition:** You must define a role that this security constraint will apply to. Possible values are:

- **<unchecked/>** Anyone can view this page.
- **<role-name>SOMEROLE</role-name>** Access to this page is limited to the defined role.

**Access Rights:** You must define the access rights given to the role defined. Possible values are:

- **view** Users can view the page.
- **viewrecursive** Users can view the page and child pages.
- **personalize** Users are able to view AND personalize the page.
- **personalizerecursive** Users are able to view AND personalize the page AND its child pages.

The example portlet-instances.xml, above, makes reference to items found in other descriptor files. To help with this topic, we have included a sample image that depicts the relationship:




## 6.2.3. jboss-portlet.xml

This descriptor is not mandatory, but is useful when having to add JBoss-Specific contexts to your portlet descriptor. It would normally be packaged inside your portlet war, alongside the other descriptors in this section.

### 6.2.3.1. Injecting Header Content

```
<?xml version="1.0" standalone="yes"?>
```

```
<!DOCTYPE portlet-app PUBLIC
   "-//JBoss Portal//DTD JBoss Portlet 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-portlet_2_6.dtd">
<portlet-app>
   <portlet>
      <portlet-name>ManagementPortlet</portlet-name>
      <header-content>
         <link rel="stylesheet" type="text/css" href="/images/management/management.css"
               media="screen"/>
      </header-content>
   </portlet>
</portlet-app>
```

The above example will inject a specific style sheet link in the top of the portal page, allowing this portlet to leverage its specific style selectors.

#### 6.2.3.2. Injecting Services in the portlet context

```
<?xml version="1.0" standalone="yes"?>
<!DOCTYPE portlet-app PUBLIC
   "-//JBoss Portal//DTD JBoss Portlet 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-portlet_2_6.dtd">
<portlet-app>
   <service>
      <service-name>UserModule</service-name>
      <service-class>org.jboss.portal.identity.UserModule</service-class>
      <service-ref>:service=Module,type=User</service-ref>
   </service>
</portlet-app>
```

Injects the UserModule service in to the portlet context, allowing a portlet to then leverage the service. For example:

```
UserModule userModule = (UserModule) getPortletContext().getAttribute("UserModule");
String userId = request.getParameters().getParameter("userid");
User user = userModule.findUserById(userId);
```

#### 6.2.3.3. Portlet Session Replication in a Clustered Environment

See Section 11.5

### 6.2.4. portlet.xml

This is the standard portlet descriptor covered by the JSR-168 Specification. It is advisable that developers read the specification items covering proper use of this descriptor, as it is only covered here briefly. For example purposes, we use an editted version of our JBoss Portal UserPortlet definition. Normally, you would package this descriptor in your portlet war.

```
<?xml version="1.0" encoding="UTF-8"?>
<portlet-app
      xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd
                          http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
      version="1.0">
```

```
   <portlet>
      <description>Portlet providing user login/logout and profile management</description>
      <portlet-name>UserPortlet</portlet-name>
      <display-name>User Portlet</display-name>
      <portlet-class>org.jboss.portal.core.portlet.user.UserPortlet</portlet-class>
      <init-param>
         <description>Whether we should use ssl on login and throughout the Portal.
         1=yes;0=no</description>
         <name>useSSL</name>
         <value>0</value>
      </init-param>
      <supports>
         <mime-type>text/html</mime-type>
         <portlet-mode>VIEW</portlet-mode>
      </supports>
      <supported-locale>en</supported-locale>
      <supported-locale>fr</supported-locale>
      <supported-locale>es</supported-locale>
      <resource-bundle>Resource</resource-bundle>
      <portlet-info>
         <title>User portlet</title>
      </portlet-info>
   </portlet>
</portlet-app>
```

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

  The *portlet-app* tag, encapsulates the entire document. You may specify more than one portlet, within this tag.

- `<portlet>...</portlet>`

  The *portlet* tag is used to define one portlet that is deployed withing this archive.

- `<description>...</description>`

  A verbal description of tis portlet's function.

- `<portlet-name>...</portlet-name>`

  The name of this portlet, usually the class name

- `<portlet-class>...</portlet-class>`

  The fully-qualified-name of this portlet class.

- `<init-param><name>...</name><value>...</value></init-param>`

  Using the *init-param* tag, you can specify initialization parameters to create initial state inside your portlet class. Normally, they would be used in the portlet's *init()* method. You can specify more than one init-param.

- `<supports>...</supports>`

  Here, you would advertise the supported *mime-type* and supported *portlet-modes* for this portlet.

- `<supported-locale>...</supported-locale>`

Here, you would advertise the supported locales for this portlet. You can specify many.

- `<resource-bundle>...</resource-bundle>`

  The resource bundle that will back the locales specified.

- `<portlet-info><title>...</title></portlet-info>`

  The portlet title that will be displayed in the portlet window's title bar.

**Note**

This is a simple portlet.xml primer, and is not meant as a replacement for what is covered in the actual Portlet specification.

## 6.3. JBoss Portal Descriptors

### 6.3.1. Datasource Descriptor (portal-*-ds.xml)

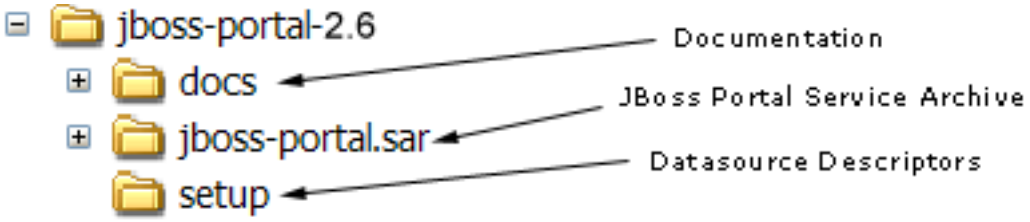
JBoss Portal requires a Datasource descriptor to be deployed alongside the *jboss-portal.sar* for access to a database. This section does not explain what a Datasource Descriptor is, but does explain where to obtain some templates that you can configure for your own installation.

**Note**

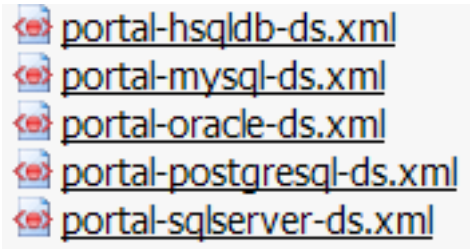
For an in-depth introduction to datasources, you can view the JBoss AS documentation online here [1] .

#### 6.3.1.1. Obtaining Datasource Descriptors Binary releases

Several template datasource descriptors can be found in the binary and bundle distributions. They are commonly located under the *setup* directory:




The directory *setup* should contain the following files, that you can customize for your own Database/Connector:



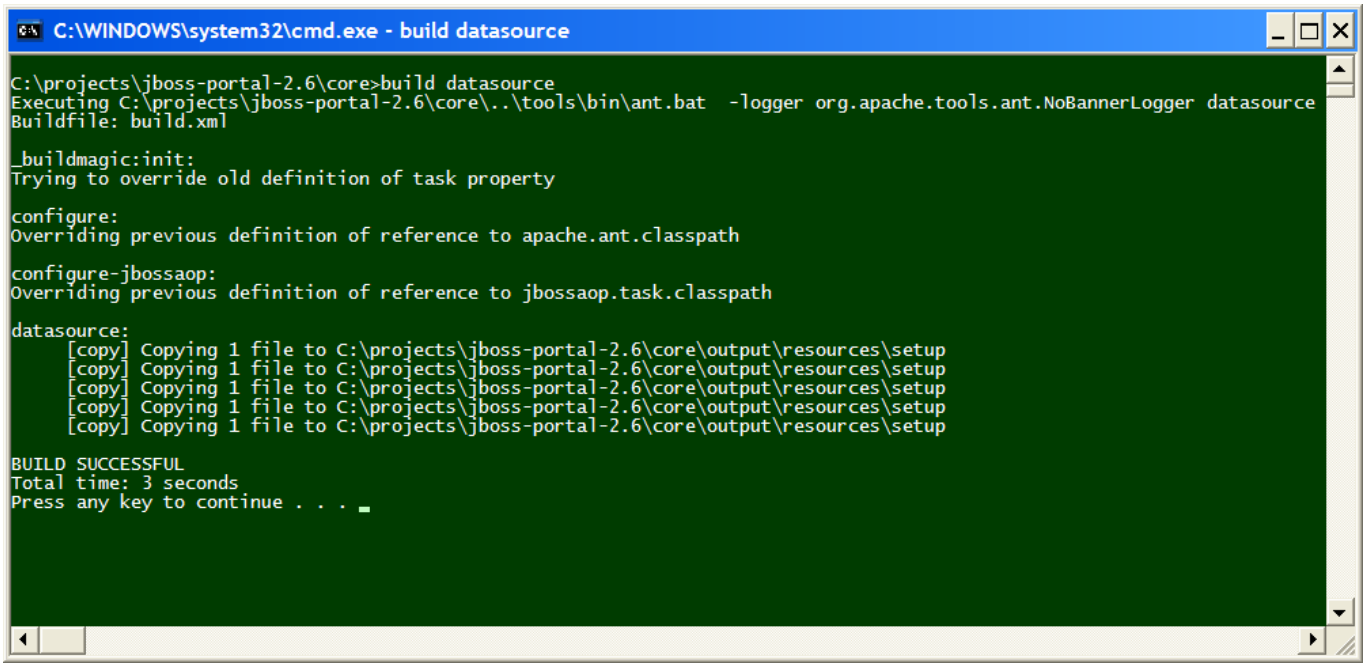

#### 6.3.1.2. Building Datasource Descriptors from Source

[1] http://wiki.jboss.org/wiki/Wiki.jsp?page=ConfigDataSources

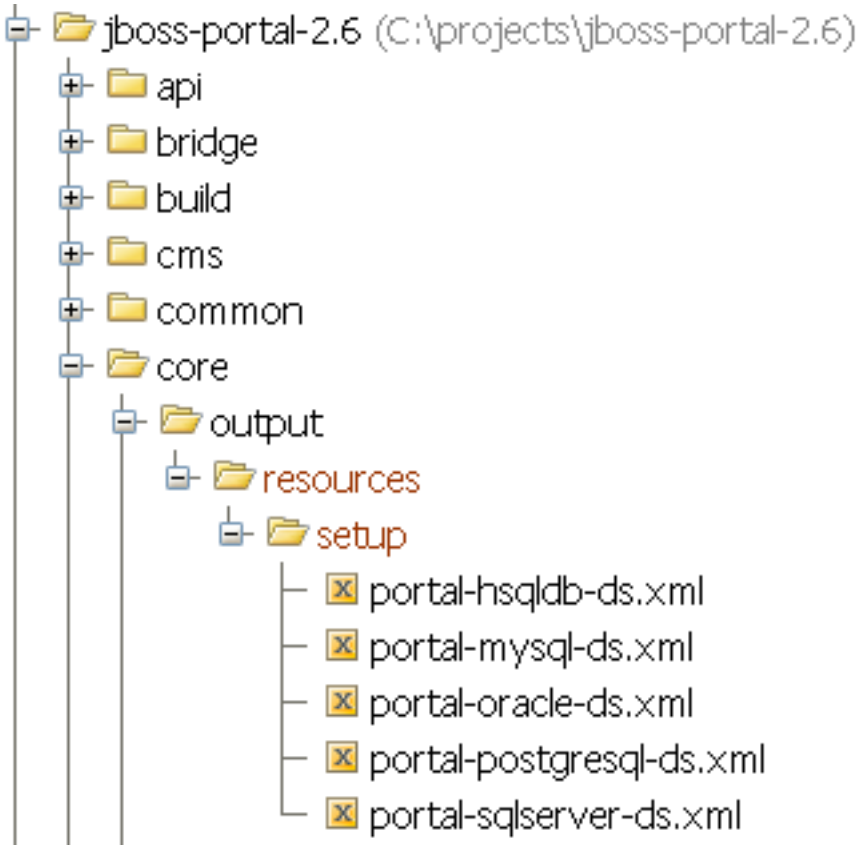
You will need a valid datasource descriptor, for JBoss Portal to communicate with your database. Having obtained the sources and having set your JBOSS_HOME environment variable ( Section 2.3.2.2 ), you can now have the JBoss Portal build system generate preconfigured datasources for you.

Navigate to *JBOSS_PORTAL_HOME_DIRECTORY/core* and type:

```
build datasource
```




Once complete, the datasource build should produce the following directory and file structure:



At this point, you should configure the one that suits you best with your Database and JDBC driver.

```
<?xml version="1.0" encoding="UTF-8"?>
<datasources>
  <local-tx-datasource>
    <jndi-name>PortalDS</jndi-name>
    <connection-url>jdbc:postgresql:jbossportal</connection-url>
    <driver-class>org.postgresql.Driver</driver-class>
    <user-name>portal</user-name>
    <password>portalpassword</password>
  </local-tx-datasource>
</datasources>
```

Please verify that the username, password, url, and driver-class are correct for your flavor of DB.

### 6.3.2. Portlet Debugging (jboss-portal.sar/conf/config.xml)

By default, JBoss Portal ships with all errors set to display. You can fine-tune this behaviour by modifying some properties in the file, *jboss-portal.sar/conf/config.xml* :

```
<!-- When a window has restrictedaccess : show or hide values are permitted -->
<entry key="core.render.window_access_denied">show</entry>
<!-- When a window is unavailable : show or hide values are permitted -->
<entry key="core.render.window_unavailable">show</entry>
<!-- When a window produces an error : show, hide or message_only values are permitted -->
<entry key="core.render.window_error">message_only</entry>
<!-- When a window produces an internal error : show, hide are permitted -->
<entry key="core.render.window_internal_error">show</entry>
<!-- When a window is not found : show or hide values are permitted -->
<entry key="core.render.window_not_found">show</entry>
```

Either *show* or *hide* are allowed as flags in these elements. Depending on the setting and actual error, either an error message is deployed or a full stack trace within the portlet window. Additionally, the *core.render.window_error* property supports the *message_only* value. This value will only display the error message whereas *show* will display the full stack trace if it is available.

### 6.3.3. Login to dashboard

By default, when a user logs in, she is forwarded to the default page of the default portal. In order to forward her to her dashboard, it is possible to set in the file *jboss-portal.sar/conf/config.xml*:

```
<!-- Namespace to use when logging-in, use "dashboard" to directly
     log-in the dashboard otherwise use "default" -->
<entry key="core.login.namespace">dashboard</entry>
```

## 6.4. Descriptor Examples

### 6.4.1. Defining a new portal page

This sample application and descriptor will create a new page, named *MyPage* in your portal. To illustrate our example, we have made available a portlet with a page descriptor that you can download here: HelloWorld Page [2] .

### Note

To use this example, simply extract the zip, and deploy the *helloworldportalpage.war* where your portal is running (hot-deployment supported).

Our sample includes a descriptor to define this new portal page, *helloworld-object.xml* , located under *helloworld-portalpage.war/WEB-INF/* , and it looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portal Object 2.6//EN"
   "http://www.jboss.org/portal/dtd/portal-object_2_6.dtd">
<deployments>
   <deployment>
      <parent-ref>default</parent-ref>
      <if-exists>overwrite</if-exists>
      <properties/>
      <page>
         <page-name>MyPage</page-name>
         <security-constraint>
            <policy-permission>
               <action-name>viewrecursive</action-name>
               <unchecked/>
            </policy-permission>
         </security-constraint>
         <window>
            <window-name>HelloWorldPortletPageWindow</window-name>
            <instance-ref>HelloWorldPortletPageInstance</instance-ref>
            <region>center</region>
            <height>0</height>
         </window>
      </page>
   </deployment>
</deployments>
```

A deployment file can be composed of a set of <deployments>. In our example file, above, we are defining a page, placing the portlet as a window on that page, and creating an instance of that portlet. You can then use the Management Portlet (bundled with JBoss Portal) to modify the instances of this portlet, reposition it, and so on...

- **<if-exists>** Possible values are *overwrite* or *keep* . *Overwrite* will destroy the existing object and create a new one based on the content of the deployment. *Keep* will maintain the existing objct deployment or create a new one if it does not yet exist.
- **<parent-ref>** Indicates whether the object should be hooked in to the portal tree.
- **<properties>** Properties definition specific to this page, commonly used to define the specific theme and layout to use. If not defined, the default portal layouts/theme combination will be used.
- **<page>** The start of a page definition.
- **<page-name>** The name of the page.
- **<window>** The start of a window definition.
- **<window-name>** The name of the window.

[2] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldPortalPage.zip

- **<instance-ref>** The instance reference used by this window. Should correspond with the <instance-name> variable.
- **<height>** The vertical position of this window within the region defined in the layout.
- **<instance>** The start of an instance definition. page.
- **<instance-name>** Maps to the above <instance-ref> variable.
- **<component-ref>** Takes the name of the application followed by the name of the portlet, as defined in the *portlet.xml*
-

```
<security-constraint>
   <policy-permission>
      <action-name>viewrecursive</action-name>
      <unchecked/>
   </policy-permission>
</security-constraint>
```

The security contraint portion is worth taking a look at, in an isolated fashion. It allows you to secure a specific page/portal based on a user's role.

**Role definition:** You must define a role that this security constraint will apply to. Possible values are:

- **<unchecked/>** Anyone can view this page.
- **<role-name>SOMEROLE</role-name>** Access to this page is limited to the defined role.

**Access Rights:** You must define the access rights given to the role defined. Possible values are:

- **view** Users can view the page.
- **viewrecursive** Users can view the page and child pages.
- **personalize** Users are able to view AND personalize the page.
- **personalizerecursive** Users are able to view AND personalize the page AND its child pages.

## 6.4.2. Defining a new portal instance

To illustrate our example, we have made available a portlet that you can download here: HelloPortal [3] .

For our example we make available *helloworld-object.xml* located under *helloworldportal.war/WEB-INF/* , and it looks like this:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portal Object 2.6//EN"
   "http://www.jboss.org/portal/dtd/portal-object_2_6.dtd">
<deployments>
   <deployment>
      <parent-ref/>
```

[3] http://anonsvn.jboss.org/repos/portletswap/portlets/2_4/bundles/HelloWorldPortal.zip

```
      <if-exists>overwrite</if-exists>
      <portal>
         <portal-name>HelloPortal</portal-name>
         <supported-modes>
            <mode>view</mode>
            <mode>edit</mode>
            <mode>help</mode>
         </supported-modes>
         <supported-window-states>
            <window-state>normal</window-state>
            <window-state>minimized</window-state>
            <window-state>maximized</window-state>
         </supported-window-states>
         <properties>
            <!-- Set the layout for the default portal -->
            <!-- see also portal-layouts.xml -->
            <property>
               <name>layout.id</name>
               <value>generic</value>
            </property>
            <!-- Set the theme for the default portal -->
            <!-- see also portal-themes.xml -->
            <property>
               <name>theme.id</name>
               <value>renaissance</value>
            </property>
            <!-- set the default render set name (used by the render tag in layouts) -->
            <!-- see also portal-renderSet.xml -->
            <property>
               <name>theme.renderSetId</name>
               <value>divRenderer</value>
            </property>
         </properties>
         <security-constraint>
            <policy-permission>
               <action-name>personalizerecursive</action-name>
               <unchecked/>
            </policy-permission>
         </security-constraint>
         <page>
            <page-name>default</page-name>
            <security-constraint>
               <policy-permission>
                  <action-name>viewrecursive</action-name>
                  <unchecked/>
               </policy-permission>
            </security-constraint>
            <window>
               <window-name>MyPortletWindow</window-name>
               <instance-ref>MyPortletInstance</instance-ref>
               <region>center</region>
               <height>0</height>
            </window>
         </page>
      </portal>
   </deployment>
   <deployment>
      <parent-ref>HelloPortal</parent-ref>
      <if-exists>overwrite</if-exists>
      <page>
         <page-name>foobar</page-name>
         <security-constraint>
            <policy-permission>
               <action-name>viewrecursive</action-name>
               <unchecked/>
            </policy-permission>
```

```
         </security-constraint>
         <window>
            <window-name>MyPortletWindow</window-name>
            <instance-ref>MyPortletInstance</instance-ref>
            <region>center</region>
            <height>0</height>
         </window>
      </page>
   </deployment>
</deployments>
```

This example, when deployed, will register a new portal instance named `HelloPortal` with two pages in it. The portal instance can be accessed by navigating to: http://localhost:8080/portal/portal/HelloPortal for the default page, and http://localhost:8080/portal/portal/HelloPortal/foobar , for the second page created.

### Note

You must define a page named `default` for any new portal instance to be accessible via a web browser.

# 7

# Portal urls

**Julien Viet** `<julien@jboss.org>`

**Thomas Heute** `<theute@jboss.org>`

**Roy Russo** `<roy@jboss.org>`

## 7.1. Introduction

Most of the time portals use very complicated urls, however it is possible to setup entry points in the portal that follow simple patterns.

Each portal container can contain multiple portals and within a given portal, windows are organized in pages, a page simply being a collection of windows associated to a name.

Before reading this chapter you must know how to define a page and a portal, you can refer to the chapter about XML descriptors to have a better understanding of those notions.

## 7.2. Accessing a portal

Each portal container can contains multiple portals, also there is one special portal which is the default portal, i.e the one used when no portal is specified in particular.

- "/", will point to the default page of the default portal.
- "/portal/portalname/" will point to the default page of the portal `portalname`

## 7.3. Accessing a page

It is possible to have multiple pages per portal. As for portal there is a default page for a given portal. Once the portal has been selected, then a page must be used and all the windows present in that page will be rendered. The page selection mechanism is the following.

- "/portal/default/pageName" will render the `pageName` page.

## 7.4. Accessing CMS Content

The CMSPortlet delivers content transparently, without modifying the url displayed. However, if you wish to deliver binary content (gif, jpeg, pdf, zip, etc...), it is desirable to display this content outside of the confines of the portal.

- `"/content/default/images/jboss_logo.gif"` will display the `jboss_logo.gif` outside of the portal. This is accomplished as the portal interprets any path beginning with `/content` as a request for CMS content. As long as the mime-type is not text/html or text/text, it will be rendered independant of the portal.

# 8

# Error handling configuration

**Julien Viet** `<julien.viet@jboss.com>`

JBoss Portal request pipeline provides configuring of the error handling policy. At runtime when an error occurs it is possible to configure how the portal behaves in a fine grained and dynamic manner.

## 8.1. Error types

There are several kind of errors that can be happen during a request.

- Access denied: the user does not have the security rights to access a resource
- Error: an expected error, like a portlet threw an exception
- Internal error: an unexpected error
- Resource not found: a resource is not found
- Resource not available: a resource is found but is not serviceable

## 8.2. Control policies

When an error occurs, the request control flow changes according to the configuration. The configuration is also called *control policy*.

### 8.2.1. Policy delegation and cascading

Whenever a control policy is invoked it is given the opportunity to change the response sent by the control flow. If the control policy ignores the error then the next policy will handle the error at this turn. However if the control policy decides to provide a new response then the next policy will not be invoked since the new response will not be of type error. For instance, if a portlet part of a page produces an exception, the following reactions are possible:

- The error is displayed in the window
- The window is removed from the aggregation
- An portal error page is displayed

- An HTTP 500 error response is sent to the browser

### 8.2.2. Default policy

The default policy applies when error are not handled at other level. By default errors are translated into the most appropriate HTTP response:

- Access denied: HTTP 403 Forbidden response
- Error: HTTP 500 Internal Server Error response
- Internal error: HTTP 500 Internal Server Error response
- Resource not found: HTTP 404 Not Found response
- Resource not available: HTTP 404 Not Found response

### 8.2.3. Portal policy

Portal error policy controls the response that will be sent to the browser when an error occurs. There is a default configuration and it is reconfigurable per portal. Whenever an error occurs, the policy can either handle a redirect to a JSP page or ignore the error. If the error is ignored it will be handled by the default policy, otherwise a JSP page will be invoked with appropriate request attributes to allow page customization.

### 8.2.4. Page policy

Window error policy controls how the page reacts to aggregation errors. Indeed the page is most of the time an aggregation of several portlet windows and the action to take when an error occurs is different than the other policies. Whenever an error occurs, the policy can either handle it or ignore it. If the error is ignored then it will be treated by the portal policy. The different actions that are possible upon an error are:

- Remove the window from the aggregation
- Replace the markup of the window by a redirection to a JSP page

## 8.3. Configuration using the XML descriptors

Since the different policies are configured using portal object properties it is possible to configure the error handling policy in the XML descriptors of those objects.

### 8.3.1. Portal policy properties

A set of properties configure the the behavior of the portal policy. Those properties will only be taken in account for objects of type portal.

**Table 8.1. Portal policy properties**

| Property name | Description | Possible values |
|---|---|---|
| control.portal.access_denied | On access denied | *ignore* and *jsp* |
| control.portal.unavailable | On resource not available | *ignore* and *jsp* |
| control.portal.error | On an expected error | *ignore* and *jsp* |
| control.portal.internal_error | On an unexpected error | *ignore* and *jsp* |
| control.portal.not_found | On resource not found | *ignore* and *jsp* |
| control.portal.resource_uri | The path of the JSP used for redirections | A valid path to a JSP located in the portal-core.war file |

An example of portal configuration:

```
<portal>
   <portal-name>MyPortal</portal-name>
   ...
   <properties>
      <property>
         <name>control.portal.access_denied</name>
         <value>ignore</value>
      </property>
      <property>
         <name>control.portal.unavailable</name>
         <value>ignore</value>
      </property>
      <property>
         <name>control.portal.not_found</name>
         <value>ignore</value>
      </property>
      <property>
         <name>control.portal.internal_error</name>
         <value>jsp</value>
      </property>
      <property>
         <name>control.portal.error</name>
         <value>jsp</value>
      </property>
      <property>
         <name>control.portal.resource_uri</name>
         <value>/WEB-INF/jsp/error/portal.jsp</value>
      </property>
      ...
   </properties>
   ...
</portal>
```

## 8.3.2. Page policy properties

A set of properties configure the the behavior of the page policy. Those properties will only be taken in account for objects of type portal and page.

**Table 8.2. Page policy properties**

| Property name | Description | Possible values |
|---|---|---|
| control.page.access_denied | On access denied | *ignore*, *jsp* and *hide* |
| control.page.unavailable | On resource not available | *ignore*, *jsp* and *hide* |
| control.page.error | On an expected error | *ignore*, *jsp* and *hide* |
| control.page.internal_error | On an unexpected error | *ignore*, *jsp* and *hide* |
| control.page.not_found | On resource not found | *ignore*, *jsp* and *hide* |
| control.page.resource_uri | The path of the JSP used for redirections | *ignore*, *jsp* and *hide* |

An example of page configuration:

```
<page>
   <page-name>MyPortal</page-name>
   ...
   <properties>
      <property>
         <name>control.page.access_denied</name>
         <value>hide</value>
      </property>
      <property>
         <name>control.page.unavailable</name>
         <value>hide</value>
      </property>
      <property>
         <name>control.page.not_found</name>
         <value>hide</value>
      </property>
      <property>
         <name>control.page.internal_error</name>
         <value>jsp</value>
      </property>
      <property>
         <name>control.page.error</name>
         <value>jsp</value>
      </property>
      <property>
         <name>control.page.resource_uri</name>
         <value>/WEB-INF/jsp/error/page.jsp</value>
      </property>
      ...
   </properties>
   ...
</page>
```

## Note

You can configure the page properties also on objects of type portal, in that case they will be inherited by the pages which are located in the portal.

## 8.4. Handling errors with JSP

As described above it is possible to redirect error handling to a JavaServer Page. Two pages can be created to handle errors at portal and page level. Portal level error handling requires a page that will produce a full page and the page level error handling requires a page that will producer markup for a window only. When the page is invoked it will be passed a set of request attributes.

**Table 8.3. Request attributes**

| Attribute name | Attribute Description | Attribute value |
|---|---|---|
| org.jboss.portal.control.ERROR_TYPE | The error type | The possible values are *ACCESS_DENIED*, *UNAVAILABLE*, *ERROR*, *INTERNAL_ERROR*, *NOT_FOUND* |
| org.jboss.portal.control.CAUSE | The throwable cause that can be null | The object is a subclass of java.lang.Throwable |
| org.jboss.portal.control.MESSAGE | An error message that can be null | Text |

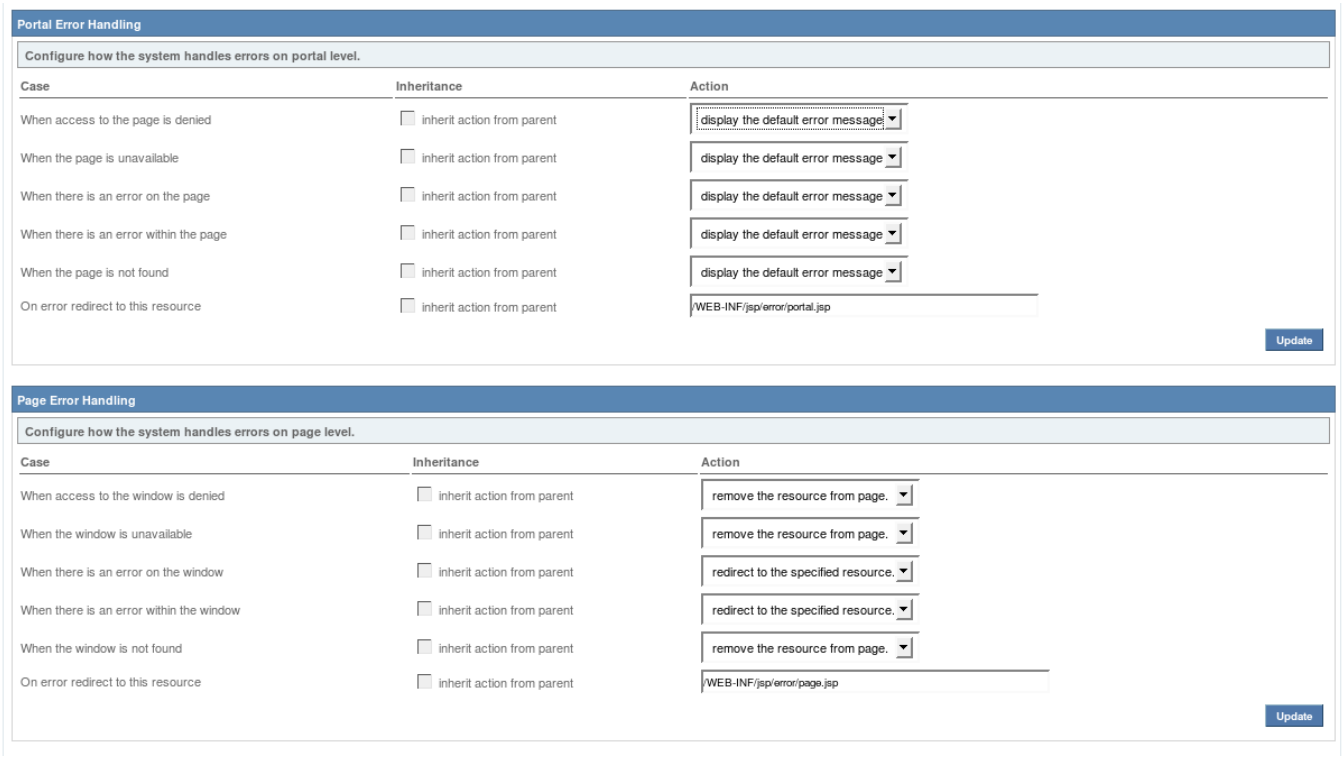
### Note

The JavaServer Pages have to be located in the jboss-portal.sar/portal-core.war Web Application.

## 8.5. Configuration using the Portal Management Application

The Error handling policy can also be configured via the Portal Management Application. The functionality is available through the "Dashboards" tab in the application

Screenshot:


Portal Error Handling
Configure how the system handles errors on portal level.
Case
Inheritance
Action
When access to the page is denied
inherit action from parent
display the default error message
When the page is unavailable
inherit action from parent
display the default error message
When there is an error on the page
inherit action from parent
display the default error message
When there is an error within the page
inherit action from parent
display the default error message
When the page is not found
inherit action from parent
display the default error message
On error redirect to this resource
inherit action from parent
/WEB-INF/jsp/error/portal.jsp
Update
Page Error Handling
Configure how the system handles errors on page level.
Case
Inheritance
Action
When access to the window is denied
inherit action from parent
remove the resource from page.
When the window is unavailable
inherit action from parent
remove the resource from page.
When there is an error on the window
inherit action from parent
redirect to the specified resource.
When there is an error within the window
inherit action from parent
redirect to the specified resource.
When the window is not found
inherit action from parent
remove the resource from page.
On error redirect to this resource
inherit action from parent
/WEB-INF/jsp/error/page.jsp
Update

# 9

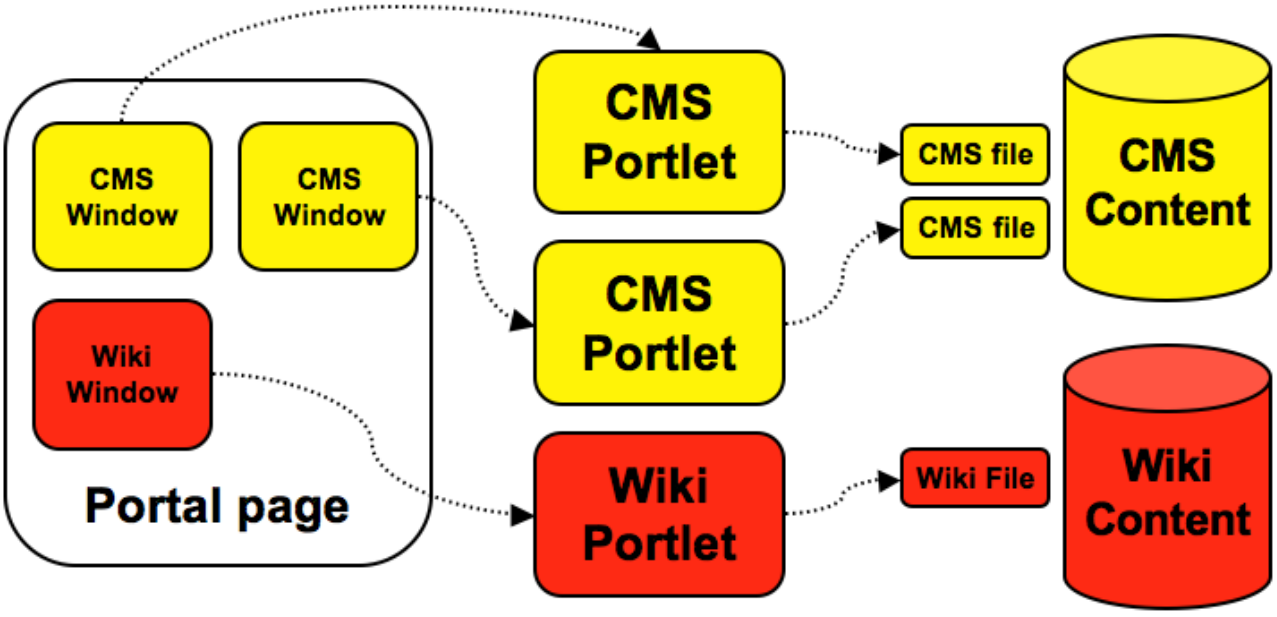
# Content Integration

**Julien Viet** `<julien @ jboss dot com>`

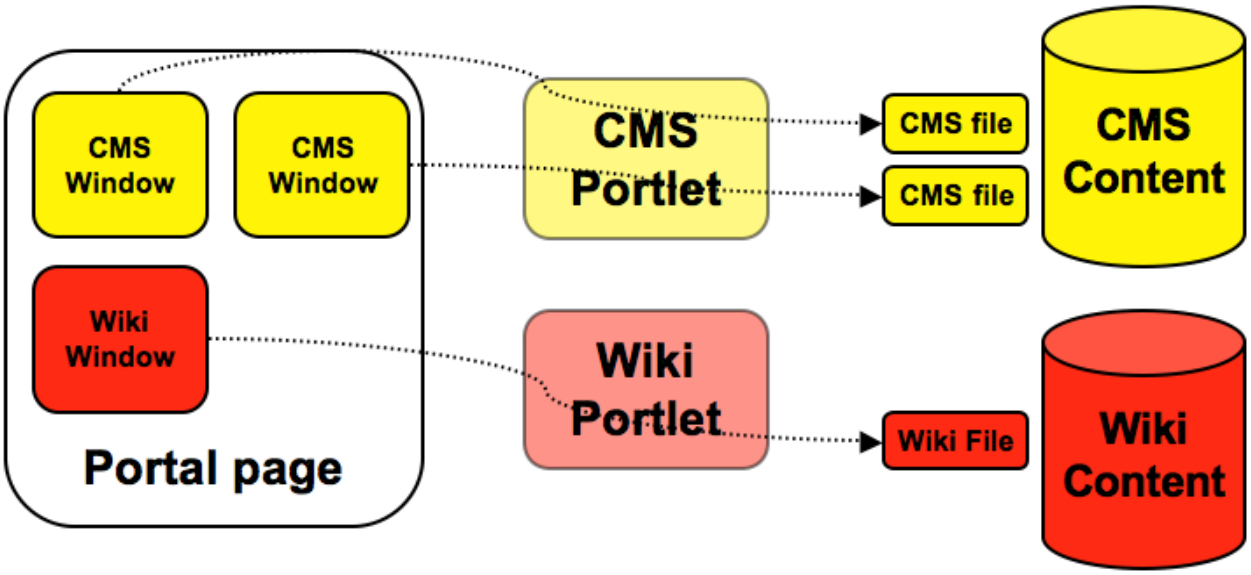
Since JBoss Portal 2.6 it is possible to provide an easy integration of content within the portal. Up to the 2.4 version content integration had to be done by configuring a portlet to show some content from an URI and then place that portlet on a page. The new content integration capabilities allows to directly configure a page window with the content URI removing the need to configure a portlet for that purpose.

### Note

We do not advocate to avoid the usage portlet preferences, we rather advocate that content configuration managed at the portal level simplifies the configuration: it helps to make content a first class citizen of the portal instead of having an intermediary portlet that holds the content for the portal. The portlet preferences can still be used to configure how content is displayed to the user.




The portal uses portlets to configure content




The portal references directly the content and use portlet to interact with content

## 9.1. Window content

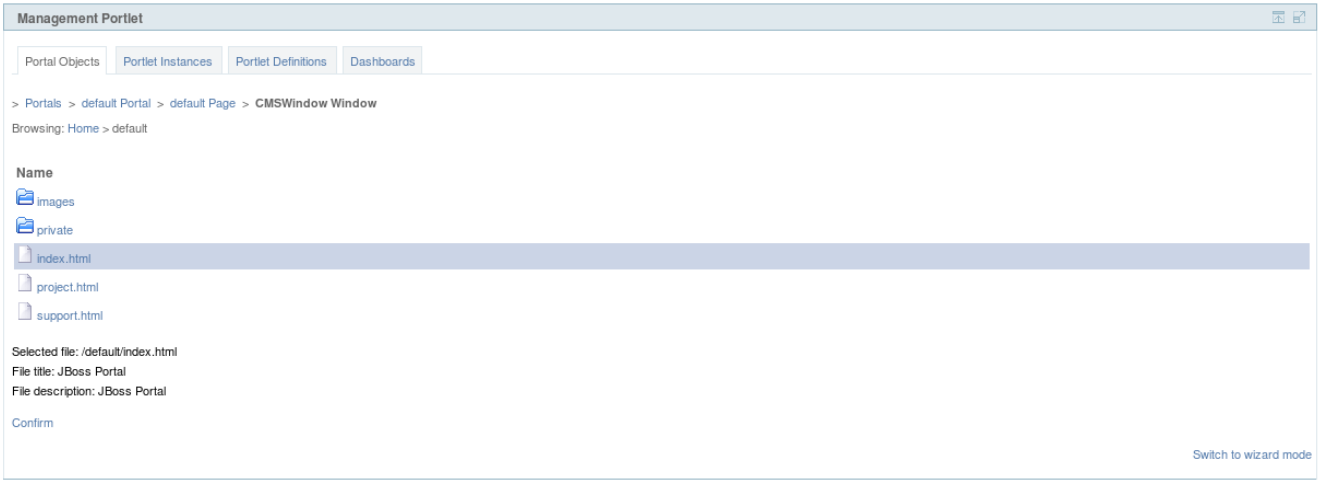
The content of a window is defined by

- The content URI which is the resource that the window is pointing to. It is an arbitrary string that the portal cannot interpret and is left up to the content provider to interpret.
- The window content type which defines how the portal interpret the window content
    - The default content type is for portlets and has the value *portlet*. For that content type, the content URI is the portlet instance id.
    - The CMS content type allows to integrate content from the CMS at the page and it has the value *cms*. For that content type, the content URI is the CMS file path.
- The content parameters which is a set of additional key/value string pairs holding state that is interpreted by the content provider.

At runtime when the portal needs to render a window it delegates the production of markup to a content provider. The portal comes with a preconfigured set of providers which handles the portlet and the cms content types. The most natural way to plug a content provider in the portal is to use a JSR 168 Portlet. Based on a few carefully chosen conventions it is possible to provide an efficient content integration with the benefit of using standards and without requiring the usage of a proprietary API.

## 9.2. Content customization

Content providers must be able to allow the user or administrator to chose content from the external resource it integrates in the portal in order to properly configure a portal window. A few interactions between the portal, the content provider and the portal user are necessary to achieve that goal. Here again it is possible to provide content customization using a JSR 168 Portlet. For that purpose two special portlet modes called *edit_content* and *select_content* has been introduced. It signals to the portlet that it is selecting or editing the content portion of the state of a portlet. *select_content* is used to select a new content to put in a window while *edit_content* is used to modify the previously defined content, often the two modes will display the same thing. The traditional edit mode is not used because the edit mode is more targetted to configure how the portlet show content to the end user rather than what content it shows.




Example of content customization - CMS Portlet

## 9.3. Content Driven Portlet

Portlet components are used to integrate content into the portal. It relies on a few conventions which allow the portal and the portlet to communicate.

### 9.3.1. Displaying content

At runtime the portal will call the portlet with the view mode when it displays content. It will send to the portlet the information about the content to display using the render parameters. Therefore the portlet has just to read the render parameters and use them to properly display the content in the portlet. The render parameters values are the key/value pairs that forms the content properties and the resource URI is found under the *uri* parameter name.

### 9.3.2. Configuring content

As explained before, the portal will call the portlet using the *edit_content* mode. In that mode the portlet and the portal will communicate using either action or render parameters. We have two use cases which are:

- The portal needs to configure a new content item for a new window. In that use case the portal will not send special render parameters to the portlet and the initial set of render parameters will be empty. The portlet can then use render parameters in order to provide navigation in the content repository. For example the portlet can navigate the CMS tree and store the current CMS path in the render parameters. Whenever the portlet has de-

cided to tell the portal that content has been selected by the user it needs to use an action URL with a special set of parameters:

- *content.action.select* equals to any value
- *content.uri* equals to the content URI
- *content.param.* used as prefix to configure content parameters

- The second use case happens when the portal needs to edit existing content. In such situation everything works as explained before except that the initial set of render parameters of the portlet will be prepopulated with the content uri URI and parameters.

## 9.3.3. Step by step example of a content driven portlet

### 9.3.3.1. The Portlet skeleton

Here is the base skeleton of the content portlet. The FSContentDrivenPortlet shows the files which are in the war file in which the portlet is deployed. The arbitrary name *filesystem* will be the content type interpreted by the portlet.

```
public class FSContentDrivenPortlet extends GenericPortlet
{

   /** The edit_content mode. */
   public static final PortletMode EDIT_CONTENT_MODE = new PortletMode("edit_content");

   /** The select_content mode. */
   public static final PortletMode SELECT_CONTENT_MODE = new PortletMode("select_content");

   ...

}
```

### 9.3.3.2. Overriding the dispatch method

First the *doDispatch(RenderRequest req, RenderResponse resp)* is overriden in order to branch the requeset flow to a method that will take care of displaying the editor.

```
protected void doDispatch(RenderRequest req, RenderResponse resp)
                  throws PortletException, PortletSecurityException, IOException
{
   if (EDIT_CONTENT_MODE.equals(req.getPortletMode()) || SELECT_CONTENT_MODE.equals(req.getPortletMode())
   {
      doEditContent(req, resp);
   }
   else
   {
      super.doDispatch(req, resp);
   }
}
```

#### 9.3.3.3. Utilities methods

The portlet also needs a few utilities methods which take care of converting content URI to a file back and forth. There is also an implementation of a file filter that keep only text files and avoid the WEB-INF directory of the war file for security reasons.

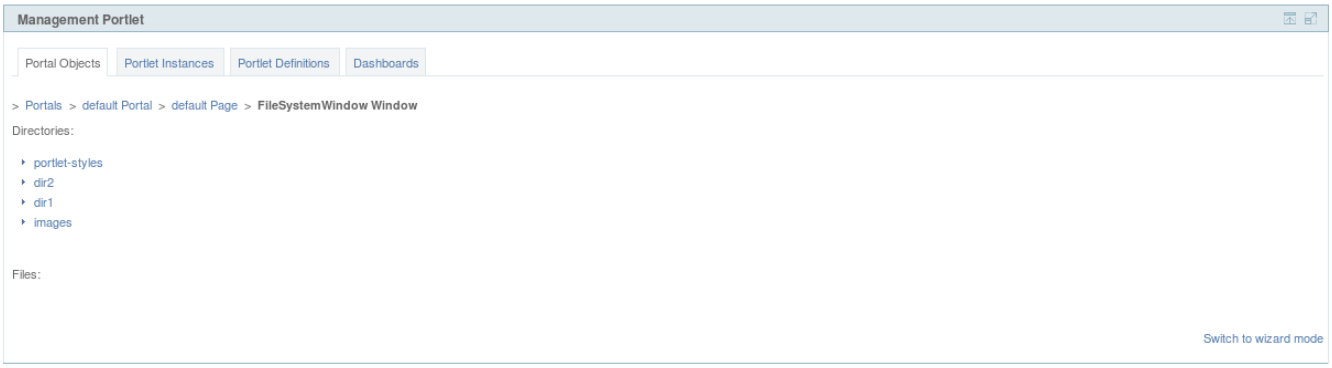
```
protected File getFile(String contentURI) throws IOException
{
   String realPath = getPortletContext().getRealPath(contentURI);
   if (realPath == null)
   {
      throw new IOException("Cannot access war file content");
   }
   File file = new File(realPath);
   if (!file.exists())
   {
      throw new IOException("File " + contentURI + " does not exist");
   }
   return file;
}
```

```
   protected String getContentURI(File file) throws IOException
   {
      String rootPath = getPortletContext().getRealPath("/");
      if (rootPath == null)
      {
         throw new IOException("Cannot access war file content");
      }

      // Make it canonical
      rootPath = new File(rootPath).getCanonicalPath();

      // Get the portion of the path that is significant for us
      String filePath = file.getCanonicalPath();
      return filePath.length() >=
        rootPath.length() ? filePath.substring(rootPath.length()) : null;
   }
```

```
   private final FileFilter filter = new FileFilter()
   {
      public boolean accept(File file)
      {
         String name = file.getName();
         if (file.isDirectory())
         {
            return !"WEB-INF".equals(name);
         }
         else if (file.isFile())
         {
            return name.endsWith(".txt");
         }
         else
         {
            return false;
         }
      }
   };
```

### 9.3.3.4. The editor

The editor is probably the longest part of the portlet. It tries to stay simple though and goes directly to the point.




Content editor of FSContentDrivenPortlet in action

```
protected void doEditContent(RenderRequest req, RenderResponse resp)
                  throws PortletException, PortletSecurityException, IOException
{
   // Get the uri value optionally provided by the portal
   String uri = req.getParameter("content.uri");

   // Get the working directory directory
   File workingDir;
   if (uri != null)
   {
      workingDir = getFile(uri).getParentFile();
   }
   else
   {
      // Otherwise try to get the current directory we are browsing,
      // if no current dir exist we use the root
      String currentDir = req.getParameter("current_dir");
      if (currentDir == null)
      {
         currentDir = "/";
      }
      workingDir = getFile(currentDir);
   }

   // Get the parent path
   String parentPath = getContentURI(workingDir.getParentFile());

   // Get the children of the selected file, we use a filter
   // to retain only text files and avoid WEB-INF dir
   File[] children = workingDir.listFiles(filter);

   // Configure the response
   resp.setContentType("text/html");
   PrintWriter writer = resp.getWriter();

   //
   writer.print("Directories:<br/>");
   writer.print("<ul>");
   PortletURL choseDirURL = resp.createRenderURL();
   if (parentPath != null)
   {
      choseDirURL.setParameter("current_dir", parentPath);
      writer.print("<li><a href=\"" + choseDirURL + "\">..</a></li>");
   }
   for (int i = 0;i < children.length;i++)
```

```
   {
      File child = children[i];
      if (child.isDirectory())
      {
         choseDirURL.setParameter("current_dir", getContentURI(child));
         writer.print("<li><a href=\"" + choseDirURL + "\">" + child.getName() +
                      "</a></li>");
      }
   }
   writer.print("</ul><br/>");

   //
   writer.print("Files:<br/>");
   writer.print("<ul>");
   PortletURL selectFileURL = resp.createActionURL();
   selectFileURL.setParameter("content.action.select", "select");
   for (int i = 0;i < children.length;i++)
   {
      File child = children[i];
      if (child.isFile())
      {
         selectFileURL.setParameter("content.uri", getContentURI(child));
         writer.print("<li><a href=\"" + selectFileURL + "\">" + child.getName() +
                      "</a></li>");
      }
   }
   writer.print("</ul><br/>");

   //
   writer.close();
}
```

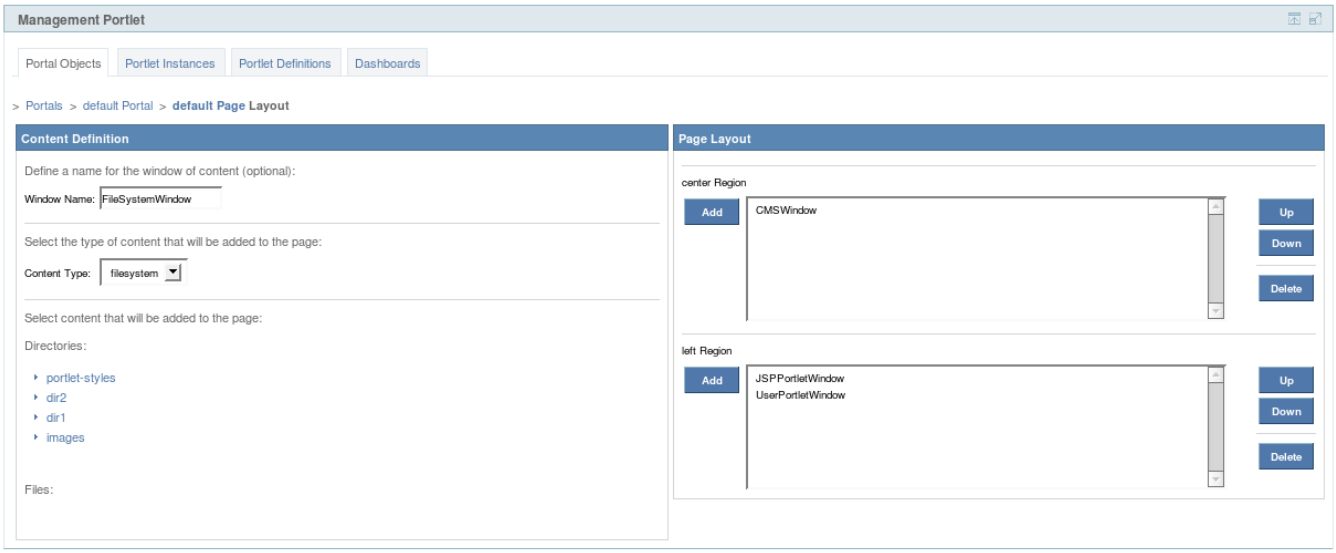
#### 9.3.3.5. Viewing content at runtime

Last but not least the portlet needs to implement the *doView(RenderRequest req, RenderResponse resp)* method in order to display the file that the portal window wants to show.

```
protected void doView(RenderRequest req, RenderResponse resp)
                  throws PortletException, PortletSecurityException, IOException
{
   // Get the URI provided by the portal
   String uri = req.getParameter("uri");

   // Configure the response
   resp.setContentType("text/html");
   PrintWriter writer = resp.getWriter();

   //
   if (uri == null)
   {
      writer.print("No selected file");
   }
   else
   {
      File file = getFile(uri);
      FileInputStream in = null;
      try
      {
         in = new FileInputStream(file);
         FileChannel channel = in.getChannel();
         byte[] bytes = new byte[(int)channel.size()];
         ByteBuffer buffer = ByteBuffer.wrap(bytes);
         channel.read(buffer);
```

```
            writer.write(new String(bytes, 0, bytes.length, "UTF8"));
         }
         catch (FileNotFoundException e)
         {
            writer.print("No such file " + uri);
            getPortletContext().log("Cannot find file " + uri, e);
         }
         finally
         {
            if (in != null)
            {
               in.close();
            }
         }
      }

      //
      writer.close();
   }
```

### 9.3.3.6. Hooking the portlet into the portal




Management portlet with *filesystem* content type enabled

Finally we need to make the portal aware of the fact that the portlet can edit and interpret content. For that we need a few descriptors. The *portlet.xml* descriptor will define our portlet, the *portlet-instances.xml* will create a single instance of our portlet. The *web.xml* descriptor will contain a servlet context listener that will hook the content type in the portal content type registry.

```
<?xml version="1.0" encoding="UTF-8"?>
<portlet-app
   xmlns="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd
                       http://java.sun.com/xml/ns/portlet/portlet-app_1_0.xsd"
   version="1.0">
   ...
   <portlet>
      <description>File System Content Driven Portlet</description>
      <portlet-name>FSContentDrivenPortlet</portlet-name>
      <display-name>File System Content Driven Portlet</display-name>
      <portlet-class>org.jboss.portal.core.portlet.test.FSContentDrivenPortlet</portlet-class>
```

```
      <supports>
         <mime-type>text/html</mime-type>
      </supports>
      <portlet-info>
         <title>File Portlet</title>
         <keywords>sample,test</keywords>
      </portlet-info>
   </portlet>
   ...
</portlet-app>
```

The portlet.xml descriptor

```

<deployments>
   ...
   <deployment>
      <instance>
         <instance-id>FSContentDrivenPortletInstance</instance-id>
         <portlet-ref>FSContentDrivenPortlet</portlet-ref>
      </instance>
   </deployment>
   ...
</deployments
```

The portlet-instances.xml descriptor

```

<web-app>
   ...
   <context-param>
      <param-name>org.jboss.portal.content_type</param-name>
      <param-value>filesystem</param-value>
   </context-param>
   <context-param>
      <param-name>org.jboss.portal.portlet_instance</param-name>
      <param-value>FSContentDrivenPortletInstance</param-value>
   </context-param>
   <listener>
      <listener-class>org.jboss.content.ContentTypeRegistration</listener-class>
   </listener>
   ...
</web-app>
```

The web.xml descriptor

### Warning

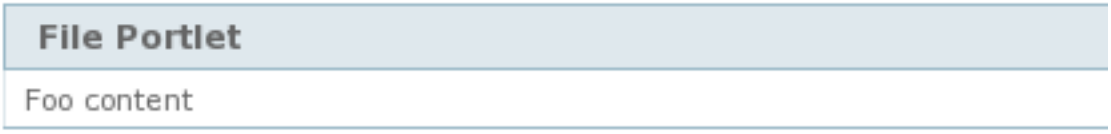
You don't need to add the listener class into your war file. As it is provided by the portal it will always be available.

## 9.4. Configuring window content in deployment descriptor

How to create a portlet that will enable configuration of content at runtime has been covered above, however it is also possible to configure content in deployment descriptors. With our previous example it would give the following snippet placed in a **-portal.xml* file:

```

```

```
<window>
<window-name>MyWindow</window-name>
<content>
   <content-type>filesystem</content-type>
   <content-uri>/dir1/foo.txt</content-uri>
</content>
<region>center</region>
<height>1</height>
</window>
```




Final effect - portal window with FSContentDrivenPortlet

### Note

How to configure CMS file this way is covered in the CMS chapter: Section 18.3

# 10

# Portal API

**Julien Viet** `<julien@jboss.org>`

**Thomas Heute** `<theute@jboss.org>`

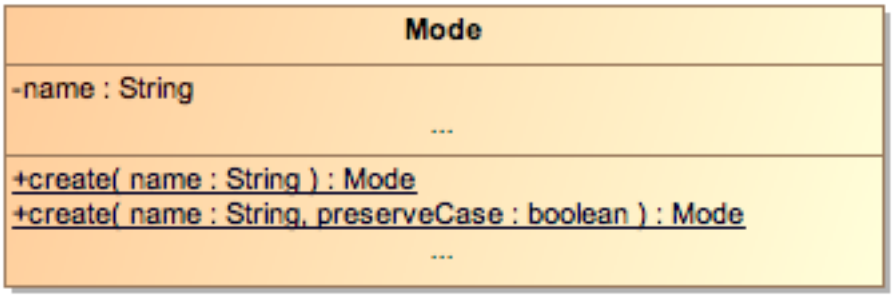
## 10.1. Introduction

JBoss Portal provides an Application Programming Interface (API) which allows to write code that interacts with the portal. The life time and validity of the API is tied to the major version which means that no changes should be required when code is written against the API provided by the JBoss Portal 2.x versions and used in a later version of JBoss Portal 2.x.

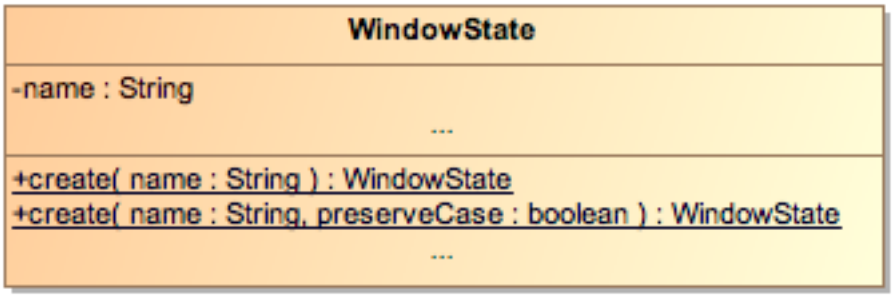
The Portal API package prefix is *org.jboss.portal.api*. All of the classes that are part of this API are prefixed with this package name except for the *org.jboss.portal.Mode* and *org.jboss.portal.WindowState* classes. These two classes were defined before the official Portal API framework was created and so the names have been maintained for backward compatibility.

The Portlet API defines two classes that represents a portion of the visual state of a Portlet which are *javax.portlet.PortletMode* and *javax.portlet.WindowState*. Likewise the Portal API defines similar classes named *org.jboss.portal.Mode* and *org.jboss.portal.WindowState* which offer comparable characteristics, the main differences are:

- Usage of factory methods to obtain instances.
- Classes implements the *java.io.Serializable* interface.




The Mode class



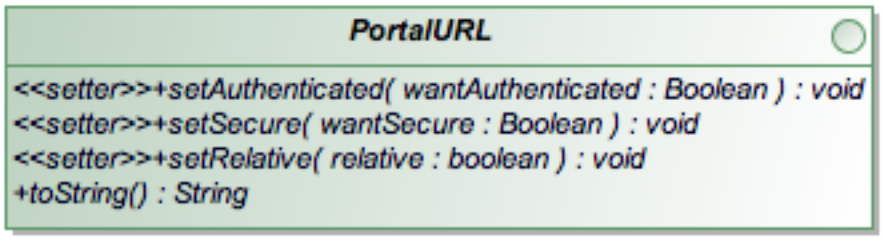

The WindowState class

**Note**

In the Portal API, the *Mode* interface is named like this because it does represent the mode of some visual object. The Portlet API names it *PortletMode* because it makes the assumption that the underlying object is of type Portlet.

## 10.2. Portal URL

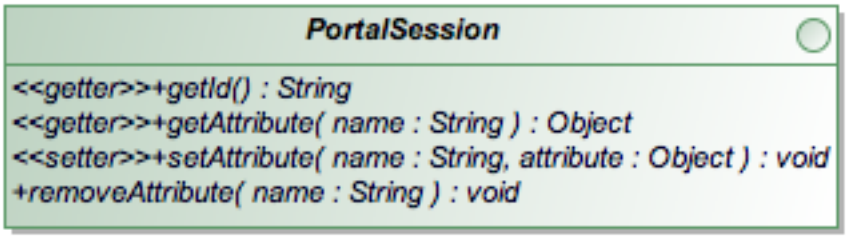
The Portal API defines the *org.jboss.portal.api.PortalURL* interface to represent URL managed by the portal.




The PortalURL interface

- The *setAuthenticated(Boolean wantAuthenticated)* methods defines if the URL requires the authentication of the user. If the argument value is true then the user must be authenticated to access the URL, if the argument value is false then the user should not be authenticated. Finally if the argument value is null then it means that the URL authenticated mode should reuse the current mode.
- The *setSecure(Boolean wantSecure)* methods defines the same as above but for the transport guarantee offered by the underlying protocol which means most of the time the secure HTTP protocol.
- The *setRelative(boolean relative)* defines the output format of the URL and whether the created URL will be an URL relative to the same web server or will be the full URL.
- The *toString()* method will create the URL as a string.

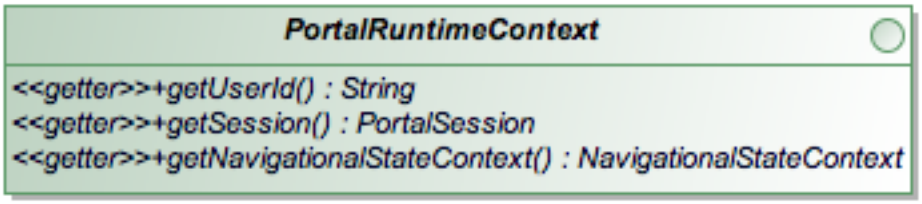
## 10.3. Portal session




The PortalSession interface

It is possible to have access to a portion of the portal session to store objects. The *org.jboss.portal.api.session.PortalSession* interface defines its API and is similar to the *javax.servlet.http.HttpSession* except that it does not offer methods to invalidate the session as the session is managed by the portal.

## 10.4. Portal runtime context



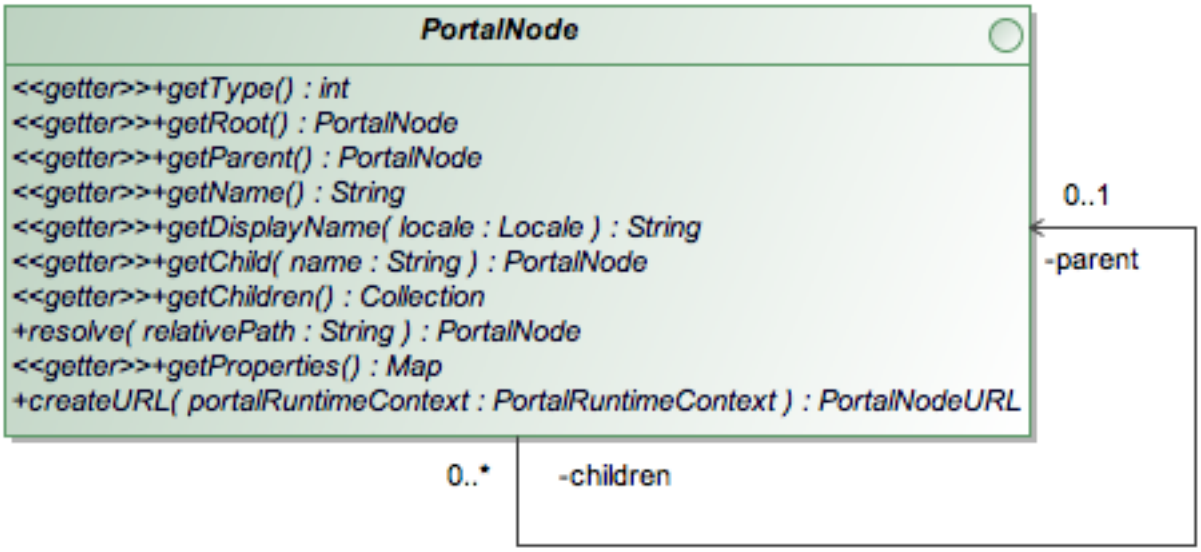

The PortalRuntimeContext interface

The *org.jboss.portal.api.PortalRuntimeContext* gives access to state or operations associated at runtime with the current user of the portal. The *String getUserId()* retrieve the user id and can return null if no user is associated with the context. It also gives access to the *PortalSession* instance associated with the current user. Finally it gives access to the *NavigationalStateContext* associated with the current user.

## 10.5. Portal nodes

The portal structure is a tree formed by nodes. It is possible to programmatically access the portal tree in order to

- discover the tree structure of the portal
- create URL that will render the different portal nodes
- access the properties of a specific node




The PortalNode interface

As usual with tree structures, the main interface to study is the *org.jboss.portal.api.node.PortalNode*. That interface is intentionally intended for obtaining useful information from the tree. It is not possible to use it to modify the tree shape because it is not intended to be a management interface.

```
public interface PortalNode
{
   int getType();
   String getName();
   String getDisplayName(Locale locale);
   Map getProperties();
   PortalNodeURL createURL(PortalRuntimeContext portalRuntimeContext);
   ...
}
```

The interface offers methods to retrieve informations for a given node such as the node type, the node name or the properties of the node. The noticeable node types are:

- PortalNode.TYPE_PORTAL : the node represents a portal
- PortalNode.TYPE_PAGE : the node represents a portal page
- PortalNode.TYPE_WINDOW : the node represents a page window

The *org.jboss.portal.api.node.PortalNodeURL* is an extension of the *PortalURL* interface which adds additional methods useful for setting parameters on the URL. There are no guarantees that the portal node will use the parameters. So far portal node URL parameters are only useful for nodes of type *PortalNode.TYPE_WINDOW* and they should be treated as portlet render parameters in the case of the portlet is a local portlet and is not a remote portlet. The method that creates portal node URL requires as parameter an instance of *PortalRuntimeContext*.

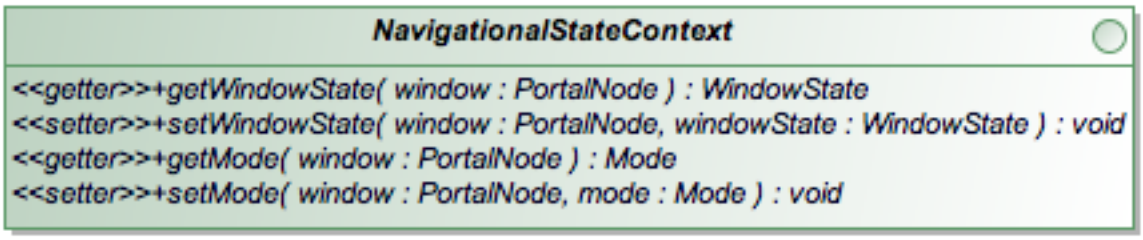
The interface also offers methods to navigate the node hierarchy:

```
public interface PortalNode
{
```

```
   ...
   PortalNode getChild(String name);
   Collection getChildren();
   PortalNode getRoot();
   PortalNode getParent();
   ...
}
```

## 10.6. Portal navigational state

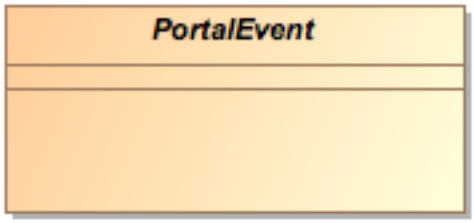
The navigational state is a state managed by the portal that associates to each user the state triggered by its navigation. A well known part of the navigational state are the render parameters provided at runtime during the call of the method *void render(RenderRequest req, RenderResponse resp)*. The portal API offers an interface to query and update the navigational state of the portal. For now the API only exposes mode and window states of portal nodes of type window.




The NavigationalStateContext interface

## 10.7. Portal events

Portal events are a powerful mechanism to be aware of what is happening in the portal at runtime. The base package for event is *org.jboss.portal.api.event* and it contains the common event classes and interfaces.




The PortalEvent class

The *org.jboss.portal.api.event.PortalEvent* abstract class is the base class for all kind of portal events.


The PortalEventContext interface

The *org.jboss.portal.api.event.PortalEventContext* interface defines the context in which an event is created and propagated. It allows retrieval of the *PortalRuntimeContext* which can in turn be used to obtain the portal context.


The PortalEventListener interface

The *org.jboss.portal.api.event.PortalEventListener* interface defines the contract that class can implement in order to receive portal event notifications. It contains the method *void onEvent(PortalEvent event)* called by the portal framework.

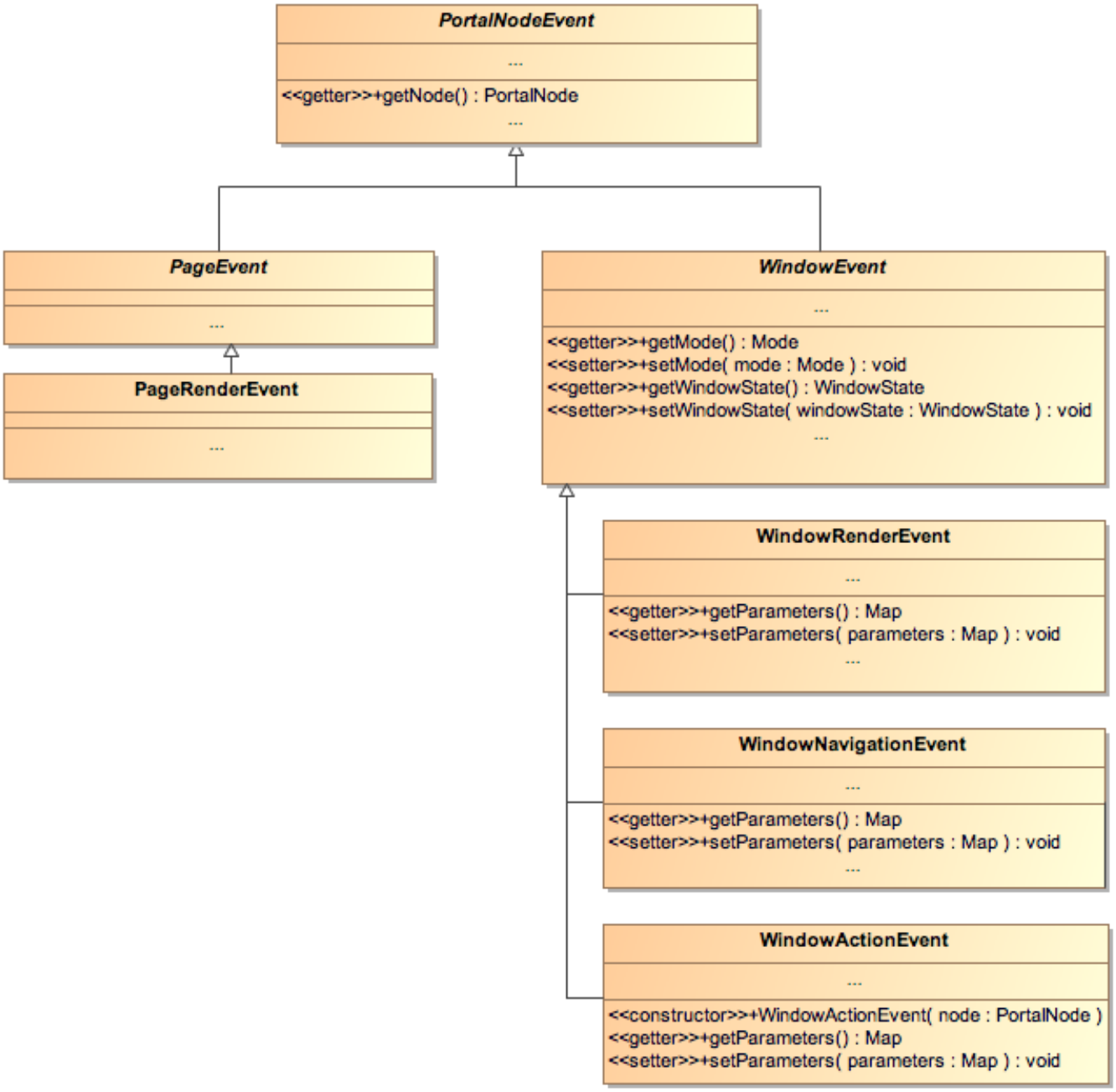
Listeners declaration requires a service to be deployed in JBoss that will instantiate the service implementation and register it with the service registry. We will see how to achieve that in the example section of this chapter.

### Important

The event propagation model uses one instance of a listener class to receive all portal events that may be routed to that class when appropriate. Therefore implementors needs to be aware of that model and must provide implementations that are thread safe.

## 10.7.1. Portal node events

Portal node events extends the abstract portal event framework in order to provide notifications about user interface events happening at runtime. For instance when the portal renders a page or a window, a corresponding event will be fired.




The portal node event class hierarchy

The *org.jboss.portal.api.node.event.PortalNodeEvent* class extends the *org.jboss.portal.api.node.PortalEvent* class and is the base class for all events of portal nodes. It defines a single method *PortalNode getNode()* which can be used to retrieve the node targetted by the event.

The *org.jboss.portal.api.node.event.WindowEvent* is an extension for portal nodes of type window. It provides access to the mode and window state of the window. It has 3 subclasses which represent different kind of event that can target windows.

The *org.jboss.portal.api.node.event.WindowNavigationEvent* is fired when the window navigational state changes. For a portlet it means that the window is targetted by an URL of type render.

The *org.jboss.portal.api.node.event.WindowActionEvent* is fired when the window is targetted by an action. For a

portlet it means that the window is targetted by an URL of type action.

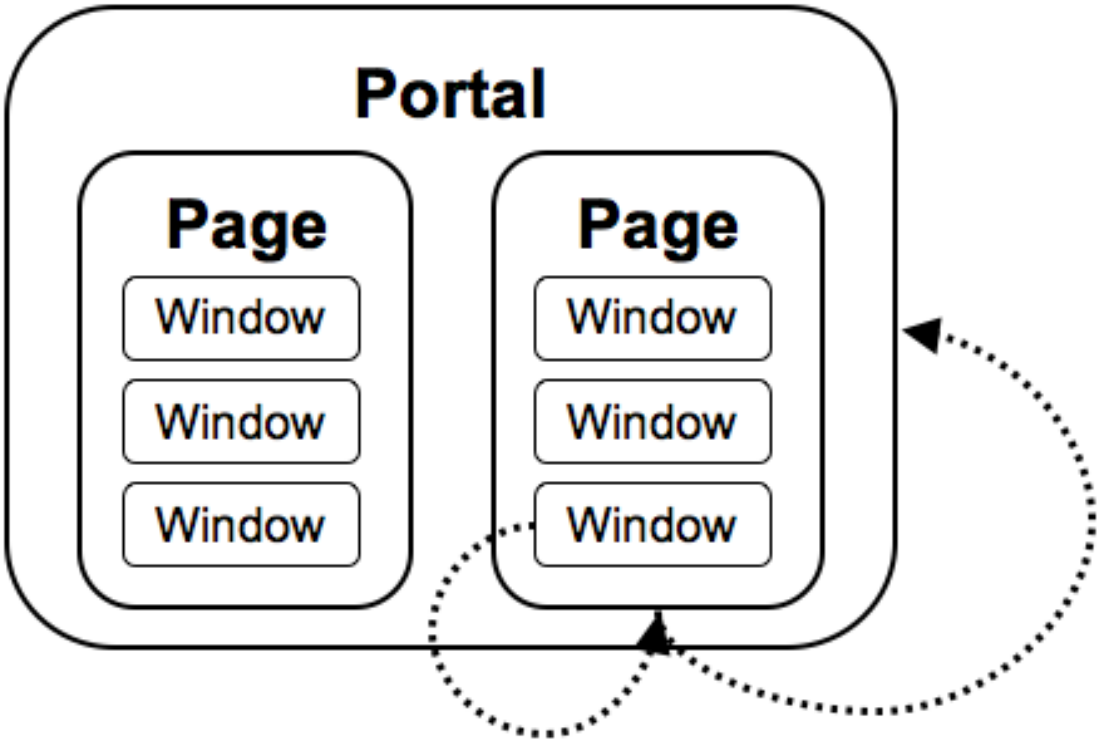
The *org.jboss.portal.api.node.event.WindowRenderEvent* is fired when the window is going to be rendered by the portal.

The *org.jboss.portal.api.node.event.PageEvent* is an extension for portal nodes of type page.

The *org.jboss.portal.api.node.event.PageRenderEvent* is fired when the page is going to be rendered by the portal.

#### 10.7.1.1. Portal node event propagation model

A portal node event is fired when an event of interest happens to a portal node of the portal tree. The notification model is comparable to the bubbling propagation model [1] defined by the DOM specification. When an event is fired, the event is propagated in the hierarchy from the most inner node where the event happens to the root node of the tree.




The portal node event propagation model

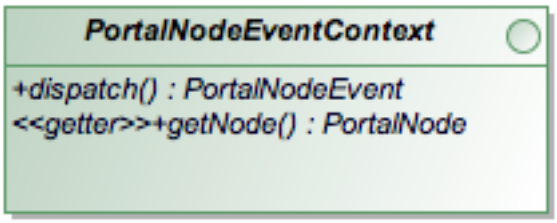
#### 10.7.1.2. Portal node event listener

The *org.jboss.portal.api.node.event.PortalNodeEventListener* interface should be used instead of the too generic *org.jboss.portal.api.event.PortalEventListener* when it comes down of listening portal node events. Actually it does not replace it, the *PortalEventListener* interface semantic allows only traditional event delivering. The *PortalNodeEventListener* interface is designed to match the bubbling effect during an event delivery.

The *PortalNodeEvent onEvent(PortalNodeEventContext context, PortalNodeEvent event)* method declares a *PortalNodeEvent* as return type. Commonly the method returns null; however, a returned PortalNodeEvent replaces the event in the listeners subsequently called during the event bubbling process.

[1] http://en.wikipedia.org/wiki/DOM_Events#Event_flow

#### 10.7.1.3. Portal node event context




The PortalNodeEventContext interface

The *org.jboss.portal.api.node.event.PortalNodeEventContext* interface extends the *PortalEventContext* interface and plays an important role in the event delivery model explained in the previous section. That interface gives full control over the delivery of the event to ascendant nodes in the hierarchy, even more it gives the possiblity to replace the current event being delivered by a new event that will be transformed into the corresponding portal behavior. However there are no guarantees that the portal will turn the returned event into a portal behavior, here the portal provides a best effort policy, indeed sometime it is not possible to achieve the substitution of one event by another.

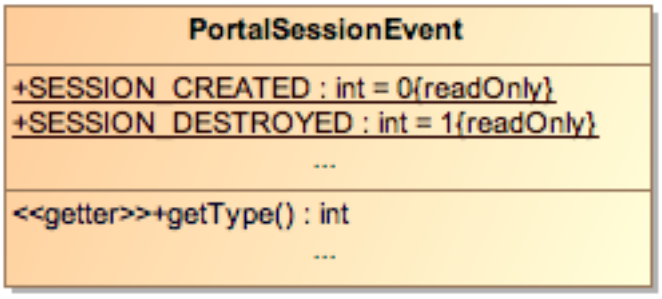
Here the simplest implementation of a listener that does nothing except than correctly passing the control to a parent event listener if there is one.

```
public PortalNodeEvent onEvent(PortalNodeEventContext context, PortalNodeEvent event)
{
   return context.dispatch();
}
```

The method *PortalNode getNode()* returns the current node being selected during the event bubbler dispatching mechanism.

### 10.7.2. Portal session events

The life cycle of the session of the portal associated with the user can also raise events. This kind of event is not bound to a portal node since it is triggered whenever a portal session is created or destroyed



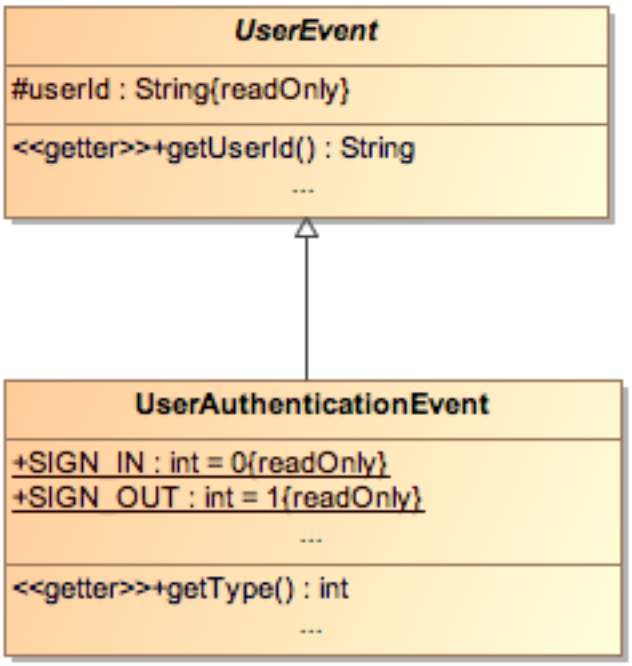

The PortalSessionEvent class

There are two different types of events:

- org.jboss.portal.api.session.event.PortalSessionEvent.SESSION_CREATED, fired when a new portal session is created
- org.jboss.portal.api.session.event.PortalSessionEvent.SESSION_DESTROYED, fired when a new portal session is destroyed

### 10.7.3. Portal user events

The life cycle of the portal user can also raise events such as its authentication. A subclass of the wider scope UserEvent class is provided and triggers events whenever a user signs in or out. The UserEvent object gives access to the user name of the logged-in user through the method *String getId()*.




The UserEvent class and UserAuthenticationEvent sub-classes

The UserAuthenticationEvent triggers two events that can be catched:

- org.jboss.portal.api.session.event.UserAuthenticationEvent.SIGN_IN, fired when a portal user signs in
- org.jboss.portal.api.session.event.UserAuthenticationEvent.SIGN_OUT, fired when a portal user signs out

Based on the UserEvent class other custom user related events could be added like one that would trigger when a new user is being registered

## 10.8. Examples

The events mechanism is quite powerful, in this section of the chapter we will see few simple examples to explain how it works.

### 10.8.1. UserAuthenticationEvent example

In this example, we will create a simple counter of the number of logged-in registered users. In ordder to do that we just need to keep track of Sign-in and Sign-out events.

First, let's write our listener. It just a class that will implement *org.jboss.portal.api.event.PortalEventListener* and its unique method *void onEvent(PortalEventContext eventContext, PortalEvent event)*. Here is such an example:

```
package org.jboss.portal.core.portlet.test.event;

import[...]

public class UserCounterListener implements PortalEventListener
{

   /** Thread-safe long */
   private final SynchronizedLong counter = new SynchronizedLong(0);

   /** Thread-safe long */
   private final SynchronizedLong counterEver = new SynchronizedLong(0);

   public void onEvent(PortalEventContext eventContext, PortalEvent event)
   {
      if (event instanceof UserAuthenticationEvent)
      {
         UserAuthenticationEvent userEvent = (UserAuthenticationEvent)event;
         if (userEvent.getType() == UserAuthenticationEvent.SIGN_IN)
         {
            counter.increment();
            counterEver.increment();
         }
         else if (userEvent.getType() == UserAuthenticationEvent.SIGN_OUT)
         {
            counter.decrement();
         }
         System.out.println("Counter     : " + counter.get());
         System.out.println("Counter ever: " + counterEver.get());
      }
   }
}
```

On this method we simply filter down to UserAuthenticationEvent then depending on the type of authentication event we update the counters. *counter* keeps track of the registered and logged-in users, while counterEver only counts the number of times people logged-in the portal.

Now that the Java class has been written we need to register it so that it can be actionned when the events are triggered. To do so we need to register it as an mbean. It can be done by editing the sar descriptor file: *YourService.sar/META-INF/jboss-service.xml* so that it looks like the following:

```
<?xml version="1.0" encoding="UTF-8"?>
<server>
   <mbean
      code="org.jboss.portal.core.event.PortalEventListenerServiceImpl"
      name="portal:service=ListenerService,type=counter_listener"
      xmbean-dd=""
      xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
      <xmbean/>
      <depends
         optional-attribute-name="Registry"
```

```
         proxy-type="attribute">portal:service=ListenerRegistry</depends>
      <attribute name="RegistryId">counter_listener</attribute>
      <attribute name="ListenerClassName">
              org.jboss.portal.core.portlet.test.event.UserCounterListener
      </attribute>
   </mbean>
</server>
```

This snippet can be kept as it is, providing you change the values:

- **name:** Must follow the pattern: portal:service=ListenerService,type={{UNIQUENAME}}
- **RegistryId:** Must match the type (here: counter_listener)
- **ListenerClassName:** Full path to the listener (here: org.jboss.portal.core.portlet.test.event.UserCounterListener).

That's it we now have a user counter that will display it states each time a user logs-in our logs-out.

## 10.8.2. Achieving Inter Portlet Communication with the events mechanism

The first version of the Portlet Specification (JSR 168), regretfully, did not cover interaction between portlets. The side-effect of diverting the issue to the subsequent release of the specification, has forced portal vendors to each craft their own proprietary API to achieve interportlet communication. Here we will see how we can use the event mechanism to pass parameters from one portlet to the other.

The overall scenario will be that Portlet B will need to be updated based on some parameter set on Portlet A. To achieve that we will use a portal node event.

Portlet A is a simple Generic portlet that has a form that sends a color name:

```
public class PortletA extends GenericPortlet
{
   protected void doView(RenderRequest request, RenderResponse response)
      throws PortletException, PortletSecurityException, IOException
   {
      response.setContentType("text/html");
      PrintWriter writer = response.getWriter();
      writer.println("<form action=\"" + response.createActionURL() + "\" method=\"post\">");
      writer.println("<select name=\"color\">");
      writer.println("<option>blue</option>");
      writer.println("<option>red</option>");
      writer.println("<option>black</option>");
      writer.println("</select>");
      writer.println("<input type=\"submit\"/>");
      writer.println("</form>");
      writer.close();
   }
}
```

The other portlet (Portlet B) that will receive parameters from Portlet A is also a simple Generic portlet:

```
public class PortletB extends GenericPortlet
```

```
{

   public void processAction(ActionRequest request, ActionResponse response)
               throws PortletException, PortletSecurityException, IOException
   {
      String color = request.getParameter("color");
      if (color != null)
      {
         response.setRenderParameter("color", color);
      }
   }

   protected void doView(RenderRequest request, RenderResponse response)
          throws PortletException, PortletSecurityException, IOException
   {
      String color = request.getParameter("color");
      response.setContentType("text/html");
      PrintWriter writer = response.getWriter();
      writer.println("<div" +
         (color == null ? "" : " style=\"color:" + color + ";\"") +
         ">some text in color</div>");
      writer.close();
   }

   // Inner listener explained after
}
```

With those two portlets in hands, we just want to pass parameters from Portlet A to Portlet B (the color in as a request parameter in our case). In order to achieve this goal, we will write an inner Listener in Portlet B that will be triggered on any WindowActionEvent of Portlet A. This listener will create a new WindowActionEvent on the window of Portlet B.

```
public static class Listener implements PortalNodeEventListener
{
   public PortalNodeEvent onEvent(PortalNodeEventContext context, PortalNodeEvent event)
   {
      PortalNode node = event.getNode();
      // Get node name
      String nodeName = node.getName();
      // See if we need to create a new event or not
      WindowActionEvent newEvent = null;
      if (nodeName.equals("PortletAWindow") && event instanceof WindowActionEvent)
      {
         // Find window B
         WindowActionEvent wae = (WindowActionEvent)event;
         PortalNode windowB = node.resolve("../PortletBWindow");
         if (windowB != null)
         {
            // We can redirect
            newEvent = new WindowActionEvent(windowB);
            newEvent.setParameters(wae.getParameters());
            // Redirect to the new event
            return newEvent;
         }
      }
      // Otherwise bubble up
      return context.dispatch();
   }
}
```

It is important to note here some of the important items in this listener class. Logic used to determine if the requesting node was Portlet A.:

```
nodeName.equals("PortletAWindow")
```

Get the current window object so we can dispatch the event to it:

```
PortalNode windowB = node.resolve("../PortletBWindow");
```

Set the original parameter from Portlet A, so Portlet B can access them in its processAction():

```
newEvent.setParameters(wae.getParameters());
```

### Note

The portlet 2.0 specification (JSR 286) will cover Inter Portlet Communication so that portlets using it can work with different portal vendors.

## 10.8.3. Link to other pages

Linking to some other pages or portals is also out of the scope of the portlet specification. As seen previously JBoss Portal offers an API in order to create links to other portal nodes. The JBoss request gives access to the current window node from which we can navigate from.

```
// Get the ParentNode. Since we are inside a Window, the Parent is the Page
PortalNode thisNode = req.getPortalNode().getParent();

// Get the Node in the Portal hierarchy tree known as "../default"
PortalNode linkToNode = thisNode.resolve("../default");

// Create a RenderURL to the "../default" Page Node
PortalNodeURL pageURL = resp.createRenderURL(linkToNode);

// Output the Node's name and URL for users
html.append("Page: " + linkToNode.getName() + " -> ");
html.append("<a href=\"" + pageURL.toString() + "\">" + linkToNode.getName() + "</a>");
```

From this, it is easy to create a menu or sitemap, the *List getChildren()* method will return all the child nodes on which the user has the view right access.

### Samples

Those examples are available in the core-samples package in the sources of JBoss Portal. There are more examples of events usage in the samples delivered with JBoss Portal. One of them shows the usage of a portal node event to only have one window in normal mode at a time in a region. Anytime another window is being put in normal mode, all the other windows of the same regions are automatically minimized.

# 11

# Clustering Configuration

**Julien Viet** <julien.viet@jboss.com>

**Roy Russo** <roy@jboss.org>

This section covers configuring JBoss Portal to function in a clustered environment.

## 11.1. Introduction

JBoss Portal leverages various clustered services that are found in JBoss Application Server. This section briefly details how each is leveraged:

- **JBoss Cache:** Used to replicate data among the different hibernate session factories that are deployed in each node of the cluster.
- **JBoss HA Singleton:**

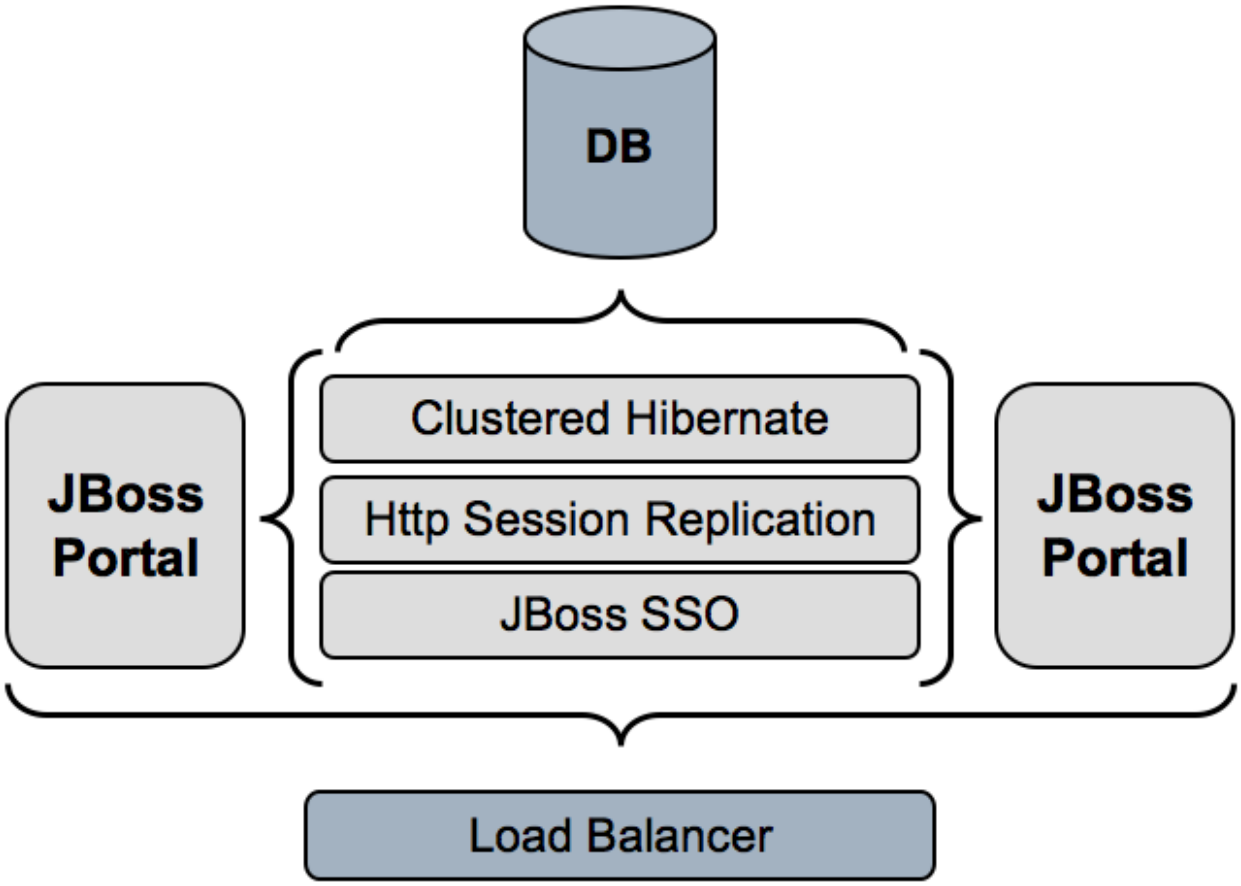
  1. Used to make the deployer a singleton on the cluster, in order to avoid concurrency issues when deploying the various *-object.xml files. Without that, each node would try to create the same objects in the database when it deploys an archive containing such descriptors.
  2. Used with JCR. The jackrabbit server is not able to run in a cluster by itself, therefore we make a singleton on the cluster. This provides HA-CMS, which is similar to the current HA JBossMQ provided in JBoss AS.

- **HA-JNDI:** Used to replicate a proxy that will talk to the HA CMS on the cluster.
- **Http Session Replication:** Used to replicate the portal and the portlet sessions.
- **JBoss SSO:** Used to replicate the user identity, an authenticated user does not have to login again when failover occurs.

### Note

JBoss Clustering details can be found in the Wiki [1] or the clustering documentation [2].

[1] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossHA
[2] http://www.jboss.com/products/jbossas/docs




## 11.2. Considerations

When you want to run JBoss Portal on a cluster there are a few things to keep in mind:

- Deploy the portal under the **all** application server configuration as it contains the clustering services that JBoss Portal leverages.
- All the portal instances have to use the same datasource : the database is used to store the portal persistent state like pages. If you don't use a shared database then you will have consitency problems.

## 11.3. JBoss Portal Clustered Services

### 11.3.1. Portal Session Replication

The portal associates with each user an http session in order to keep specific objects such as:

- Navigational state : this is mainly the state of the different portlet windows that the user will manipulate during its interactions with the portal. For instance a maximized portlet window with specific render parameters.
- WSRP objects : the WSRP protocol can require to provide specific cookies during interactions with a remote

portlet.

Replicating the portal session ensures that this state will be kept in sync on the cluster, e.g he will see the portlet window he uses exactly the same on every node. The activation of the portal session replication is made through the configuration of the web application that is the main entry point of the portal. This setting is available in the file *jboss-portal.sar/portal-server.war/WEB-INF/web.xml*

```
<web-app>
   <description>JBoss Portal</description>
   <!-- Comment/Uncomment to enable portal session replication -->
   <distributable/>
   ...
</web-app>
```

## 11.3.2. Hibernate clustering

JBoss Portal leverages hibernate for its database access. In order to improve performances it uses the caching features provided by hibernate. On a cluster the cache needs to be replicated in order to avoid state inconsistencies. Hibernate is configured with JBoss Cache which performs that synchronization transparently. Therefore the different hibernate services must be configured to use JBoss Cache. The following hibernate configurations needs to use a replicated JBoss Cache :

- *jboss-portal.sar/conf/hibernate/user/hibernate.cfg.xml*
- *jboss-portal.sar/conf/hibernate/instances/hibernate.cfg.xml*
- *jboss-portal.sar/conf/hibernate/portal/hibernate.cfg.xml*
- *jboss-portal.sar/conf/hibernate/portlet/hibernate.cfg.xml*

The cache configuration should look like :

```
<!--
   | Uncomment in clustered mode : use transactional replicated cache
   -->
   <property name="cache.provider_class">org.jboss.portal.core.hibernate.JMXTreeCacheProvider
   </property>
   <property name="cache.object_name">portal:service=TreeCacheProvider,type=hibernate
   </property>

<!--
   | Comment in clustered mode
   <property name="cache.provider_configuration_file_resource_path">
   conf/hibernate/instance/ehcache.xml</property>
   <property name="cache.provider_class">org.hibernate.cache.EhCacheProvider</property>
-->
```

Also we need to ensure that the cache is deployed by having in the file *jboss-portal.sar/META-INF/jboss-service.xml* the cache service uncommented :

```
<!--
   | Uncomment in clustered mode : replicated cache for hibernate
   -->
   <mbean
```

```
   code="org.jboss.cache.TreeCache"
   name="portal:service=TreeCache,type=hibernate">
   <depends>jboss:service=Naming</depends>
   <depends>jboss:service=TransactionManager</depends>
   <attribute name="TransactionManagerLookupClass">
   org.jboss.cache.JBossTransactionManagerLookup</attribute>
   <attribute name="IsolationLevel">REPEATABLE_READ</attribute>
   <attribute name="CacheMode">REPL_SYNC</attribute>
   <attribute name="ClusterName">portal.hibernate</attribute>
   </mbean>

   <mbean
   code="org.jboss.portal.core.hibernate.JBossTreeCacheProvider"
   name="portal:service=TreeCacheProvider,type=hibernate">
   <depends optional-attribute-name="CacheName">portal:service=TreeCache,type=hibernate
   </depends>
   </mbean>
```

More information can be found here [3].

### 11.3.3. Identity clustering

JBoss Portal leverages the servlet container authentication for its own authentication mechanism. When the user is authenticated on one particular node he will have to reauthenticate again if he use another node of the cluster (during a failover for instance). This is valid only for the *FORM* based authentication which is the default form of authentication that JBoss Portal uses. Fortunately JBoss provides transparent reauthentication of the user called JBoss clustered SSO. Its configuration is in the file *$JBOSS_HOME/server/all/deploy/jbossweb-tomcat55.sar/server.xml* and the clustered sso valve shall be uncommented

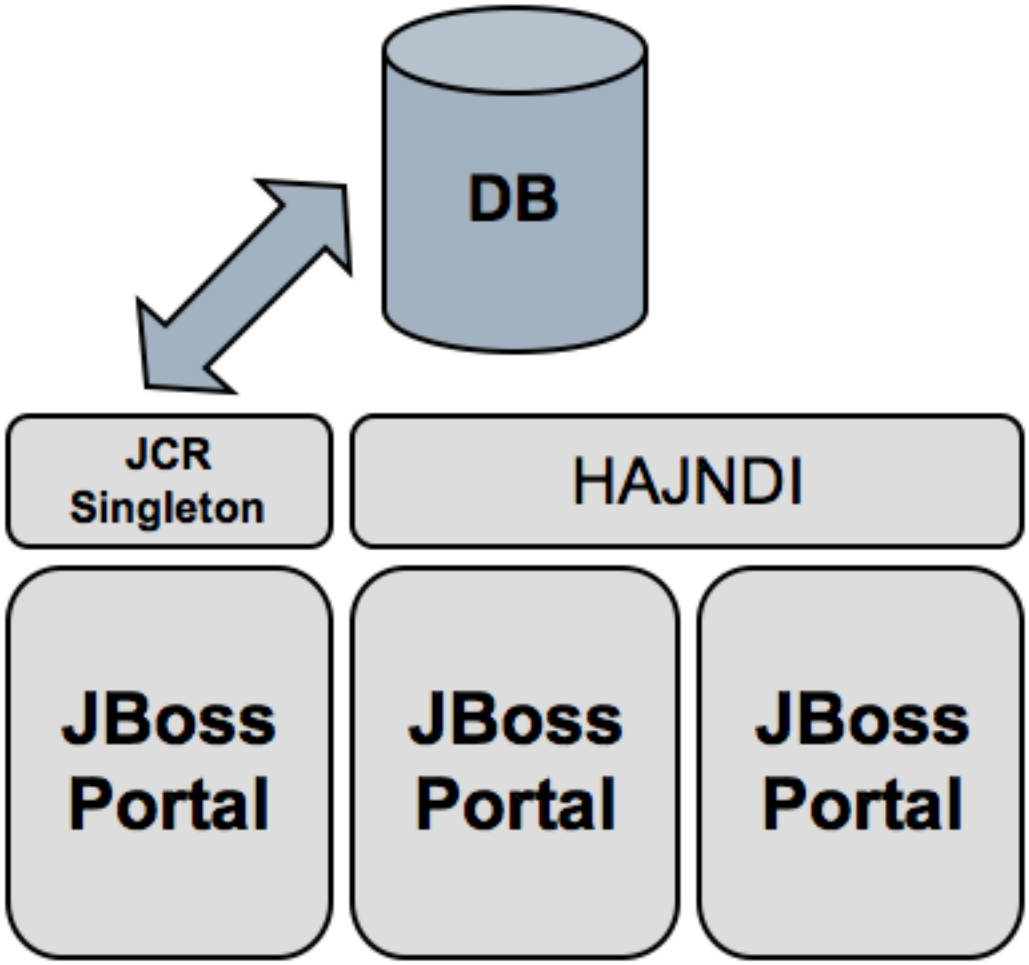
```
<Valve className="org.jboss.web.tomcat.tc5.sso.ClusteredSingleSignOn" />
```

More information can be found here [4].

### 11.3.4. CMS clustering

The CMS backend storage relies on the Apache Jackrabbit project. Jackrabbit does not support clustering out of the box. So the portal run the Jackrabbit servicey on one node of the cluster using the HA-Singleton [5] technology. The file *jboss-portal.sar/portal-cms.sar/META-INF/jboss-service.xml* contains the configuration. We will not reproduce it in this documentation as the changes are quite complex and numerous. Access from all nodes of the cluster is provided by a proxy bound in HA-JNDI. In order to avoid any bottleneck JBoss Cache is leveraged to cache CMS content cluster wide.

[3] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossCacheHibernate
[4] http://www.jboss.org/wiki/Wiki.jsp?page=SingleSignOn
[5] http://www.onjava.com/pub/a/onjava/2003/08/20/jboss_clustering.html




## 11.4. Setup

We are going to outline how to setup a two node cluster on the same machine in order to test JBoss Portal HA. The only missing part from the full fledged setup is the addition of a load balancer in front of Tomcat. However a lot of documentation exist on the subject. A detailed step by step setup of Apache and mod_jk is available from the JBoss Wiki [6].

As we need two application servers running at the same time, we must avoid any conflict. For instance we will need Tomcat to bind its socket on two different ports otherwise a network conflict will occur. We will leverage the service binding manager this chapter [7] of the JBoss AS documentation.

The first step is to copy the *all* configuration of JBoss into two separate configurations that we name *ports-01* and *ports-02* :

```
>cd $JBOSS_HOME/server
>cp -r all ports-01
>cp -r all ports-02
```

[6] http://wiki.jboss.org/wiki/Wiki.jsp?page=UsingMod_jk1.2WithJBoss
[7] http://docs.jboss.org/jbossas/jboss4guide/r3/html/ch10.html

```
```

Edit the file *$JBOSS_HOME/server/ports-01/conf/jboss-service.xml* and uncomment the service binding manager :

```
<mbean code="org.jboss.services.binding.ServiceBindingManager"
   name="jboss.system:service=ServiceBindingManager">
   <attribute name="ServerName">ports-01</attribute>
   <attribute name="StoreURL">
   ${jboss.home.url}/docs/examples/binding-manager/sample-bindings.xml</attribute>
   <attribute name="StoreFactoryClassName">org.jboss.services.binding.XMLServicesStoreFactory</attribute>
</mbean>
```

Edit the file *$JBOSS_HOME/server/ports-02/conf/jboss-service.xml*, uncomment the service binding manager and change the value *ports-01* into *ports-02*:

```
<mbean code="org.jboss.services.binding.ServiceBindingManager"
   name="jboss.system:service=ServiceBindingManager">
   <attribute name="ServerName">ports-02</attribute>
   <attribute name="StoreURL">
   ${jboss.home.url}/docs/examples/binding-manager/sample-bindings.xml</attribute>
   <attribute name="StoreFactoryClassName">
   org.jboss.services.binding.XMLServicesStoreFactory</attribute>
</mbean>
```

Setup a database that will be shared by the two nodes and obviously we cannot use an embedded database. For instance using postgresql we would copy the file *portal-postgresql-ds.xml* into *$JBOSS_HOME/server/ports-01/deploy* and *$JBOSS_HOME/server/ports-02/deploy*.

Copy JBoss Portal HA to the deploy directory of the two configurations.

*JBoss Cache Configuration Note :* To improve CMS performance JBoss Cache is leveraged to cache the content cluster wide. We recommend that you use the following version of JBoss Cache for best performance:

- *JBoss Cache 1.4.0.SP1 and above*
- *JGroups 2.2.7 or 2.2.8*

When building from source the following command: {core}/build.xml deploy-ha automatically upgrades your JBoss Cache version.

*Alternative:* If upgrading your JBoss Cache version is not an option, the following configuration change is needed in the jboss-portal-ha.sar/portal-cms.sar/META-INF/jboss-service.xml. Replace the following configuration in the *cms.pm.cache:service=TreeCache* Mbean:

```
<!--
   Configuring the PortalCMSCacheLoader
   CacheLoader configuration for 1.4.0
-->
<attribute name="CacheLoaderConfiguration">
   <config>
       <passivation>false</passivation>
       <preload></preload>
       <shared>false</shared>
       <cacheloader>
           <class>org.jboss.portal.cms.hibernate.state.PortalCMSCacheLoader</class>
           <properties></properties>
```

```
           <async>false</async>
           <fetchPersistentState>false</fetchPersistentState>
           <ignoreModifications>false</ignoreModifications>
       </cacheloader>
   </config>
</attribute>
```

with the following configuration:

```
<!--
   Configuring the PortalCMSCacheLoader
   CacheLoader configuratoon for 1.2.4SP2
-->
<attribute name="CacheLoaderClass">org.jboss.portal.cms.hibernate.state.PortalCMSCacheLoader
</attribute>
<attribute name="CacheLoaderConfig" replace="false"></attribute>
<attribute name="CacheLoaderPassivation">false</attribute>
<attribute name="CacheLoaderPreload"></attribute>
<attribute name="CacheLoaderShared">false</attribute>
<attribute name="CacheLoaderFetchTransientState">false</attribute>
<attribute name="CacheLoaderFetchPersistentState">false</attribute>
<attribute name="CacheLoaderAsynchronous">false</attribute>
```

Finally we can start both servers, open two shells and execute :

```
>cd $JBOSS_HOME/bin
>./run.sh -c ports-01
```

```
>cd $JBOSS_HOME/bin
>./run.sh -c ports-02
```

## 11.5. Portlet Session Replication

Web containers offer the capability to replicate sessions of web applications. In the context of a portal using portlets the use case is different. The portal itself is a web application that benefits of web application session replication. We have to make the distinction between local or remote portlets :

- Local portlets are web applications deployed in the same virtual machine as the portal web application. At runtime the access to a portlet is done using the mechanism of request dispatching. The portlet session is actually a mere wrapper of the underlying http session of the web application in which the portlet is deployed.
- Remote portlets are accessed using a web service, we will not cover the replication in this chapter.

The servlet specification is very loose on the subject of replication and does not state anything about the replication of sessions during a dispatched request. JBoss Portal offers a portlet session replication mechanism that leverages the usage of the portal session instead which has several advantages

- Replicate only the portlet that requires it.
- Portal session replication is just web application replication and is very standard.

There are also some limitation such has you can only replicate portlet scoped attributes of a portlet session. It means that any attribute scoped using application scope are not replicated.

### 11.5.1. JBoss Portal configuration

The mandatory step to make JBoss Portal able to replicate portlet sessions is to configure the portal web application to be distributed which is explained in Section 11.3.1

### 11.5.2. Portlet configuration

In order to activate portlet session replication you need to

- Add in the */WEB-INF/web.xml* file of your web application a specific listener class
- Configure your portlet to be distributed in the */WEB-INF/jboss-portlet.xml* file.

```
<web-app>
   ...
   <listener>
      <listener-class> org.jboss.portal.portlet.session.SessionListener </listener-class>
   </listener>
   ...
</web-app>
```

Example of web.xml file of your web application

```
<portlet-app>
   ...
   <portlet>
      <portlet-name>YourPortlet</portlet-name>
      ...
      <session-config>
         <distributed>true</distributed>
      </session-config>
      ...
   </portlet>
   ...
</portlet-app>
```

Configure YourPortlet to be replicated in jboss-portlet.xml

### 11.5.3. Limitations

As we noted above there are advantages as well as limitations to the clustering configuration

- You can only replicate portlet scoped attributes of a portlet. The main reason of this is to keep consistency with the session state. If accessing a portlet would trigger replication of application scoped attribute during the rendering of a page then another portlet on the same page could use this attribute for generating its markup. Then

the state seen by this second portlet would not be the same according to the order in which the portlets of this page are rendered.

- Mutable objects need an explicit call to *setAttribute(String name, Object value)* on the portlet session object in order to trigger replication by the container.

```
public void processAction(ActionRequest req, ActionResponse resp)
               throws PortletException, IOException
{
   ...
   if ("addItem".equals(action))
   {
      PortletSession session = req.getPortletSession();
      ShoppingCart cart = (PortletSession)session.getAttribute("cart");
      cart.addItem(item);

      // Perform an explicit set in order to signal to the container that the object
      // state has changed
      session.setAttribute("cart", cart);
   }
   ...
}
```

# 12

# Web Services for Remote Portlets (WSRP)

**Julien Viet** `<julien@jboss.org>`

**Chris Laprun** `<chris.laprun@jboss.com>`

## 12.1. 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 [1]. We suggest reading the primer [2] for a good, albeit technical, overview of WSRP.

## 12.2. Level of support in JBoss Portal

The WSRP Technical Committee defined WSRP Use Profiles [3] to help with WSRP interoperability. We will refer to terms defined in that document in this section.

JBoss Portal 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, JBoss Portal provides a Medium level of support for WSRP, except that we only handle HTML markup (as Portal itself doesn't handle other markup types). We do support explicit portlet cloning and we

[1] http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrp
[2] http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=wsrp
[3] http://www.oasis-open.org/committees/download.php/3073

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 Portal 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 [4] and perform more interoperability testing (an area that needs to be better supported by the WSRP Technical Committee and Community at large).

## 12.3. Deploying JBoss Portal's WSRP services

JBoss Portal provides a complete support of WSRP 1.0 standard interfaces and offers both consumer and producer services. WSRP support is provided by the *portal-wsrp.sar* service archive, included in the main *jboss-portal.sar* service archive, if you've obtained JBoss Portal from a binary distribution. If you don't intend on using WSRP, we recommend that you remove the *portal-wspr.sar* from the main *jboss-portal.sar* service archive.

If you've obtained the source distribution of JBoss Portal, you need to build and deploy the WSRP service separately. Please follow the instructions on how to install JBoss Portal from the sources [5]. Once this is done, navigate to *JBOSS_PORTAL_HOME_DIRECTORY/wsrp* and type:

```
build deploy
```

At the end of the build process, *portal-wsrp.sar* is copied to *JBOSS_HOME/server/default/deploy*.

### 12.3.1. Considerations to use WSRP behind firewall

WSRP is built upon the JBoss WS web service stack. There is a known issue with the version 1.0.0.GA of JBoss WS (bundled with JBoss Application Server 4.0.4.GA) that prevents the complete deployment of JBoss Portal's WSRP service if the user is not online or behind a firewall/proxy. For this reason, we recommend that you deploy Portal on JBoss Application Server 4.0.5.GA. Alternatively, you can also perform a manual upgrade of JBoss WS, in which case we recommend that you use JBoss WS version 1.2.1.GA (and later). Please follow the instructions on how to upgrade JBoss WS [6] as found on JBoss Portal's wiki [7].

### 12.3.2. Considerations to use WSRP when running Portal on a non-default port

If you have modified the port number on which Portal runs, you will also need update the port information for WSRP [8] as found on JBoss Portal's wiki [9].

[4] http://www.oasis-open.org/committees/download.php/6018
[5] http://docs.jboss.com/jbportal/v2.6/reference-guide/en/html/installation.html#install_source
[6] http://wiki.jboss.org/wiki/Wiki.jsp?page=WSRP_UpdateJBossWS
[7] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossPortal
[8] http://wiki.jboss.org/wiki/Wiki.jsp?page=WSRPChangePorts
[9] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossPortal

### 12.3.3. Considerations to use WSRP with SSL

It is possible to use WSRP over SSL for secure exchange of data. Please refer to the instructions [10] on how to do so from JBoss Portal's wiki [11].

## 12.4. Making a portlet remotable

JBoss Portal 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 adding a *remotable* element to the *jboss-portlet.xml* deployment descriptor for that portlet. If a *jboss-portlet.xml* file does not exist, one must be added to the *WEB-INF* folder of the web application containing the portlet.

In the following example, the "BasicPortlet" portlet is specified as being remotable. The *remotable* element is optional.

```
<?xml version="1.0" standalone="yes"?>
<!DOCTYPE portlet-app PUBLIC "-//JBoss Portal//DTD JBoss Portlet 2.6//EN"
          "http://www.jboss.org/portal/dtd/jboss-portlet_2_6.dtd">
<portlet-app>
   <portlet>
      <portlet-name>BasicPortlet</portlet-name>
      <remotable>true</remotable>
   </portlet>
</portlet-app>
```

It is also possible to specify that all the portlets declared within a given *jboss-portlet.xml* file have a specific "remotable" status by default. This is done by adding a single *remotable* element to the root *portlet-app* element. Usually, this feature will be used to remotely expose several portlets without having to specify the status for all the declared portlets. Let's look at an example:

```
<?xml version="1.0" standalone="yes"?>
<!DOCTYPE portlet-app PUBLIC
   "-//JBoss Portal//DTD JBoss Portlet 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-portlet_2_6.dtd">
<portlet-app>
   <remotable>true</remotable>
   <portlet>
      <portlet-name>RemotelyExposedPortlet</portlet-name>
      ...
   </portlet>
   <portlet>
      <portlet-name>NotRemotelyExposedPortlet</portlet-name>
      <remotable>false</remotable>
      ...
   </portlet>
</portlet-app>
```

[10] http://wiki.jboss.org/wiki/Wiki.jsp?page=WSRPUseSSL
[11] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossPortal

In the example above, we defined two portlets with a default "remotable" status set to true. This means that all portlets defined in this descriptor are, by default, exposed remotely by JBoss Portal's WSRP producer. Note, however, that it is possible to override the default behavior by adding a *remotable* element to a portlet description. In that case, the "remotable" status defined by the portlet takes precedence over the default. In the example above, the *RemotelyExposedPortlet* inherits the "remotable" status defined by default since it does not specify a *remotable* element in its description. The *NotRemotelyExposedPortlet*, however, overrides the default behavior and is not remotely exposed. Note that in the absence of a top-level *remotable* element, portlets are NOT remotely exposed.

## 12.5. Consuming JBoss Portal's WSRP portlets from a remote Consumer

WSRP Consumers vary a lot as far as how they are configured. Most of them require that you either specify the URL for the Producer's WSDL definition or the URLs for the individual endpoints. Please refer to your Consumer's documentation for specific instructions. For instructions on how to do so in JBoss Portal, please refer to Section 12.6.

JBoss Portal'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}/portal-wsrp/MarkupService?wsdl`. You can access the endpoint URLs at:

- `http://{hostname}:{port}/portal-wsrp/ServiceDescriptionService`
- `http://{hostname}:{port}/portal-wsrp/MarkupService`
- `http://{hostname}:{port}/portal-wsrp/RegistrationService`
- `http://{hostname}:{port}/portal-wsrp/PortletManagementService`

The default hostname is `localhost` and the default port is 8080.

## 12.6. Consuming remote WSRP portlets in JBoss Portal

### 12.6.1. Overview

To be able to consume WSRP portlets exposed by a remote producer, JBoss Portal's WSRP consumer needs to know how to access that remote producer. One can configure access to a remote producer using WSRP Producer descriptors. Alternatively, a portlet is provided to configure remote producers.

Once a remote producer has been configured, it can be made available in the list of portlet providers in the Management portlet on the Admin page of JBoss Portal. You can then examine the list of portlets that are exposed by this producer and configure the portlets just like you would for local portlets.

JBoss Portal's default configuration exposes some of the sample portlets for remote consumption. As a way to test the WSRP service, a default consumer has been configured to consume these portlets. To make sure that the service indeed works, check that there is a portlet provider with the *self* identifier in the portlet providers list in the Management portlet of the Admin page. All local portlets marked as remotable are exposed as remote portlets via the *self* portlet provider so that you can check that they work as expected with WSRP. The *portal-wsrp.sar* file con-

tains a WSRP Producer descriptor (*default-wsrp.xml*) that configures this default producer. This file can be edited or removed if needed.

## 12.6.2. Configuring a remote producer walk-through

Let's work through the steps of defining access to a remote producer so that its portlets can be consumed within JBoss Portal. We will configure access to BEA's public WSRP producer. We will first examine how to do so using an XML descriptor then see how the same can be accomplished using the configuration portlet.

### 12.6.2.1. Using a WSRP Producer XML descriptor

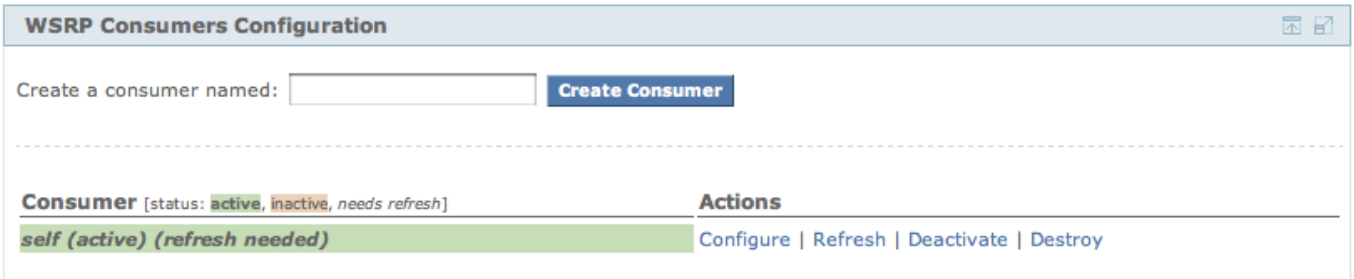
We will create a *public-bea-wsrp.xml* descriptor. Note that the actual name does not matter as long as it ends with *-wsrp.xml*.

```
<!DOCTYPE deployments PUBLIC "-//JBoss Portal//DTD WSRP Remote Producer Configuration 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-wsrp-consumer_2_6.dtd">
<?xml version="1.0" standalone="yes"?>
<deployments>
  <deployment>
    <wsrp-producer id="bea" expiration-cache="120">
      <endpoint-wsdl-url>http://wsrp.bea.com:7001/producer/producer?WSDL</endpoint-wsdl-url>
      <registration-data>
        <property>
          <name>registration/consumerRole</name>
          <lang>en</lang>
          <value>public</value>
      </registration-data>
    </wsrp-producer>
  </deployment>
</deployments>
```

This producer descriptor gives access to BEA's public WSRP producer. We will look at the details of the different elements later. Note for now the *producer-id* element with a "bea" value. Put this file in the deploy directory and start the server (with JBoss Portal and its WSRP service deployed).

### 12.6.2.2. Using the configuration portlet

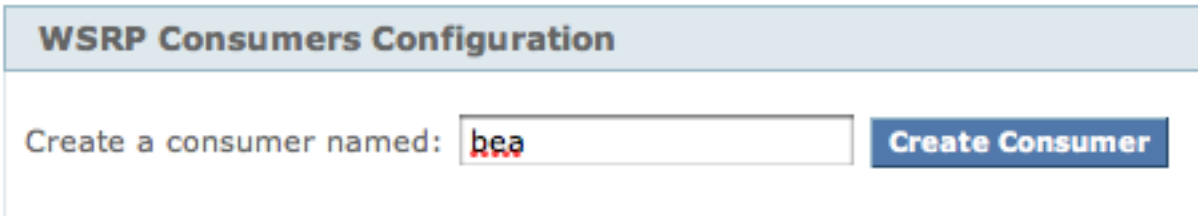
As of Portal 2.6, a configuration portlet is provided to configure access to remote WSRP Producers grahically. You can access it at `http://{hostname}:{port}/portal/auth/portal/admin/WSRP` or by logging in as a Portal administrator and clicking on the WSRP tab in the Admin portal. If all went well, you should see something similar to this:



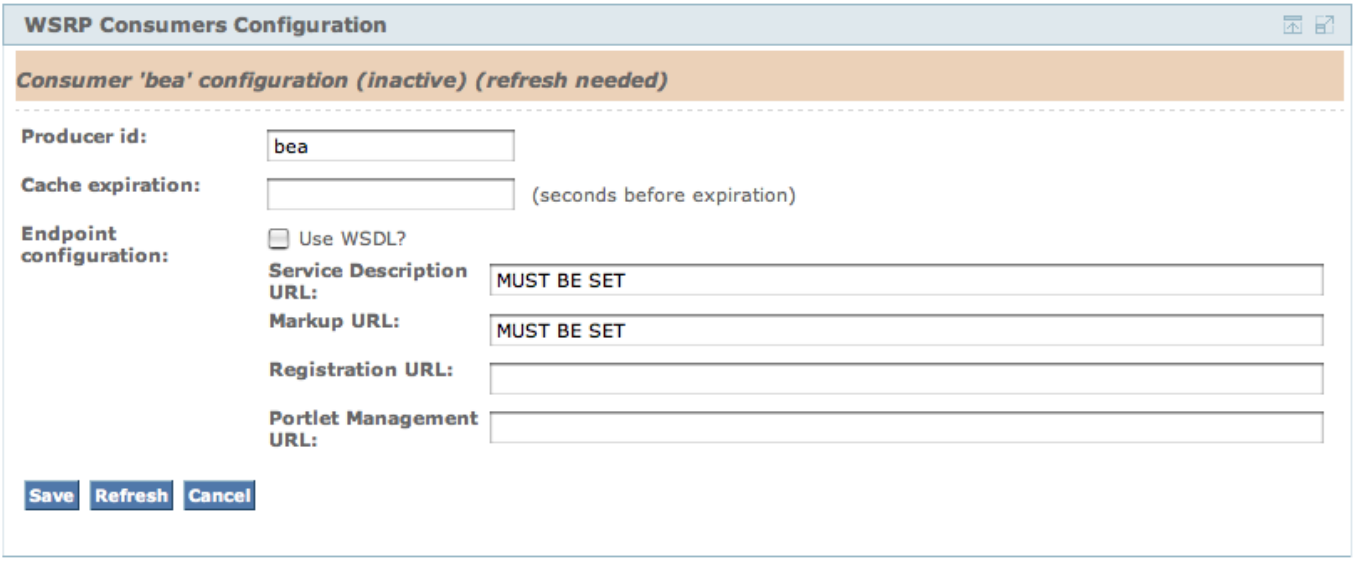

This screen presents all the configured producers associated with their status and possible actions on them. A Consumer can be active or inactive. Activating a Consumer means that it is ready to act as a portlet provider. Deactivating it will remove it from the list of available portlet providers. Note 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.

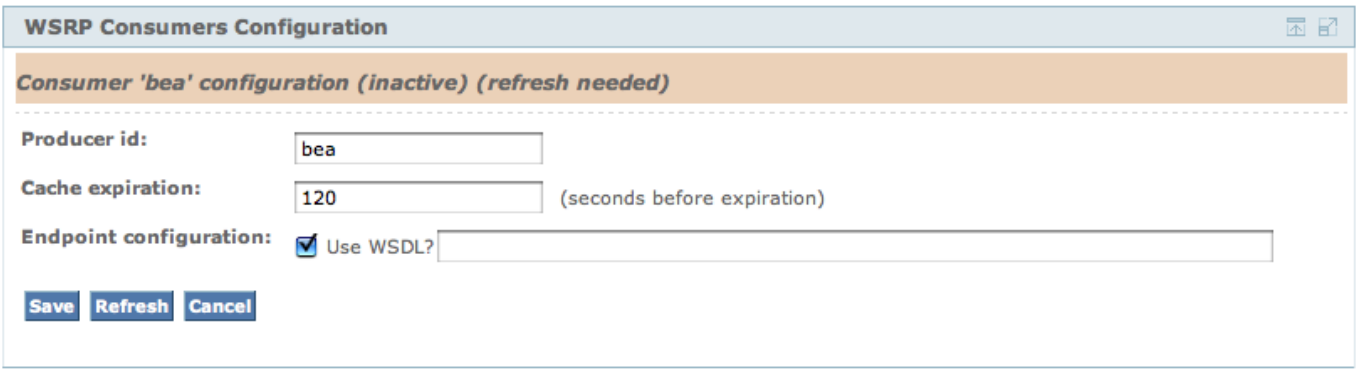
Next, we create a new Consumer which we will call "bea". Type "bea" in the "Create a consumer named:" field then click on "Create consumer":



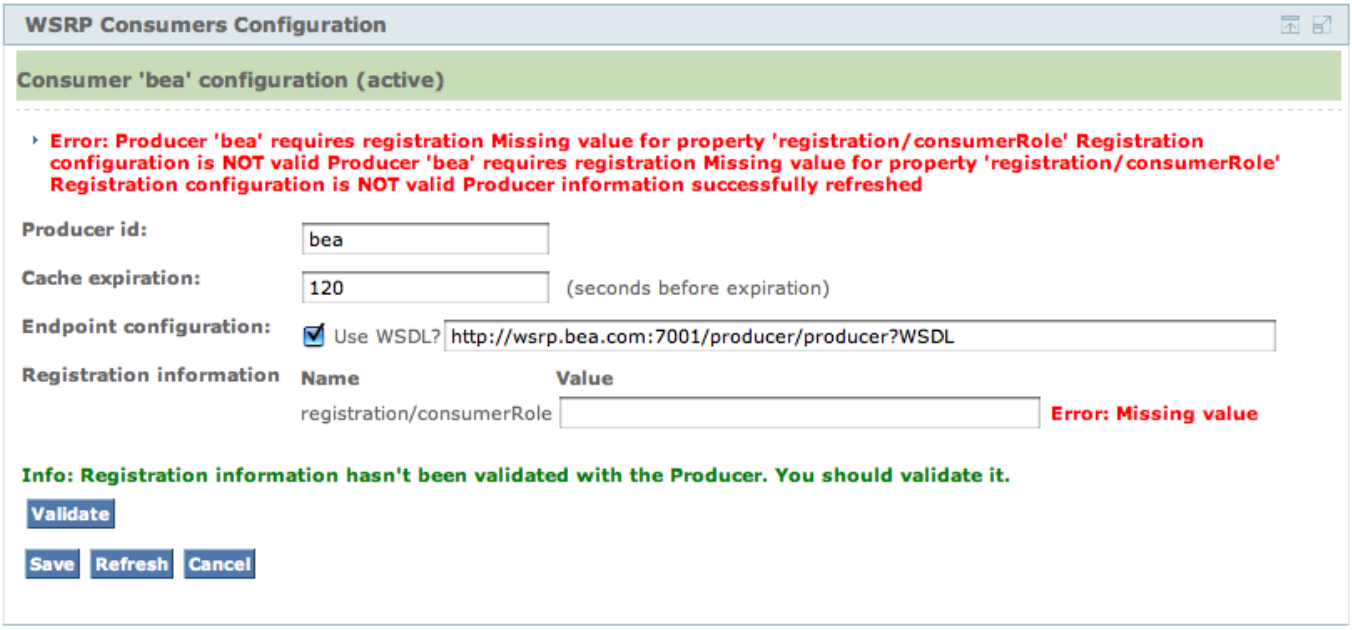

You should now see a form allowing you to enter/modify the information about the Consumer:




Set the cache expiration value to 120 seconds and check the "Use WSDL?" checkbox. The form should now morph to:




Enter the WSDL URL for the producer in the text field and press the "Refresh" button. This will retrieve the service description associated with the Producer which WSRP 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 and that it expects a value for the registration property named "registration/consumerRole":




### Note

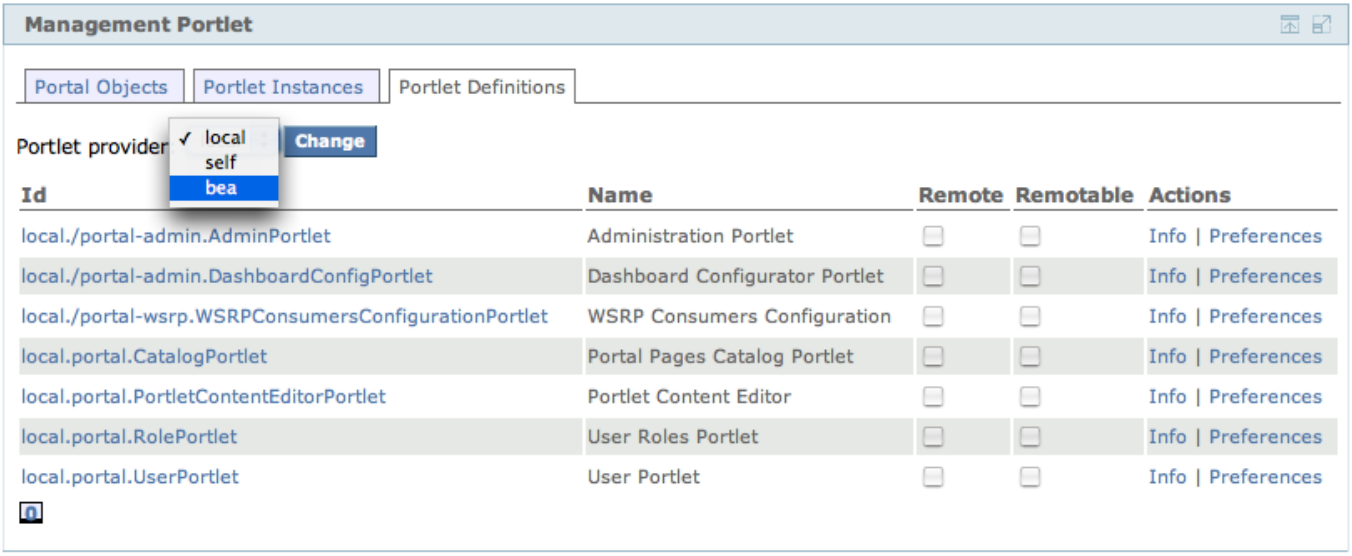
At this point, there is no automated way to learn about which possible values (if any) are expected by the remote Producer. Please refer to the specific Producer's documentation.

Enter "public" as the value for the registration property and press "Refresh" once more. You should now see something similar to:

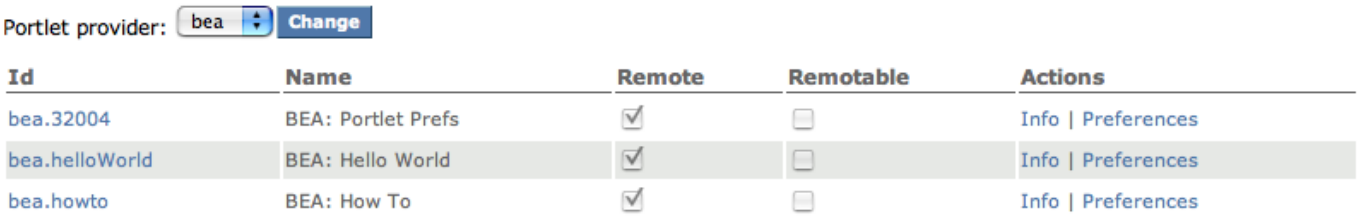

The Consumer for the "bea" Producer should now be available as a portlet provider and is ready to be used.

#### 12.6.2.3. Configuring access to a remote portlet

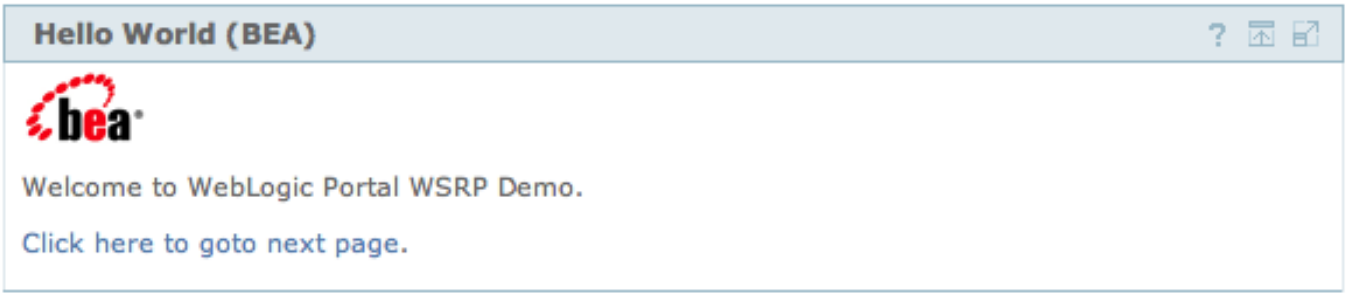
Let's now look at the Admin page and the Management portlet. Click on the "Portlet definitions" tab at the top. Once this is done, look at the list of available portlet providers. If all went well, you should see something similar to this:




We have 3 available portlet providers: *local*, *self* and *bea*. The "local" portlet provider exposes all the portlets deployed in this particular instance of Portal. As explained above, the "self" provider refers to the default WSRP consumer bundled with Portal that consumes the portlets exposed by the default WSRP producer. The "bea" provider corresponds to BEA's public producer we just configured. Select it and click on "Change". You should now see something similar to:




From there on out, you should be able to configure WSRP portlets just as any other. In particular, you can create an instance of one of the remote portlets offered by BEA's public producer just like you would create an instance of a local portlet and then assign it to a window in a page. If you go to that page, you should see something similar to below for this portlet:




## 12.6.3. WSRP Producer descriptors

A WSRP Producer descriptor is an XML file which name ends in *-wsrp.xml* and which can be dropped in the deploy directory of the JBoss application server or nested in .sar files. It is possible to configure access to several different producers within a single descriptor or use one file per producer, depending on your needs. The DTD for the WSRP Producer descriptor format can be found at *portal-wsrp.sar/dtd/jboss-wsrp-consumer_2_6.dtd*.

### Note

It is important to note how WSRP Producer descriptors are processed. They are read the first time the WSRP service starts and the associated information is then put in the Portal database. Subsequent launch of the WSRP service will use the database-stored information for all producers which identifier is already known to Portal. More specifically, all the descriptors are scanned for producer identifiers. Any identifier that is already known will be bypassed and the configuration associated with this remote producer in the database will be used. If a producer identifier is found that wasn't already in the database, that producer information will be processed and recorded in the database. Therefore, if you wish to delete a producer configuration, you need to delete the associated information in the database (this can be accomplished using the configuration portlet as we saw in Section 12.6.2.2) *AND* remove the associated information in any WSRP Producer descriptor (if such information exists) as the producer will be re-created the next time the WSRP is launched if that information is not removed.

#### 12.6.3.1. 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.

JBoss Portal also needs to learn about the remote producer's endpoints to be able to connect to the remote web services and perform WSRP invocations. Two options are currently supported to provide this information:

- You can provide the URLs for each of the different WSRP interfaces offered by the remote producer via the **<endpoint-config>** element and its **<service-description-url>**, **<markup-url>**, **<registration-url>** and **<portlet-management-url>** children. These URLs are producer-specific so you will need to refer to your producer documentation or WSDL file to determine the appropriate values.
- Alternatively, and this is the easiest way to configure your producer, you can provide a URL pointing to the WSDL description of the producer's WSRP services. This is accomplished via the **<endpoint-wsdl-url>** element. JBoss Portal will then heuristically determine, from the information contained in the WSDL file, how to connect appropriately to the remote WSRP services.

### Note

It is important to note that, when using this method, JBoss Portal will try to match a port name to an interface based solely on the provided name. There are no standard names for these ports so it is possible (though rare) that this matching process fails. In this case, you should look at the WSDL file and provide the endpoint URLs manually, as per the previous method.

Both the **id** attribute and either **<endpoint-config>** or **<endpoint-wsdl-url>** elements are required for a functional remote producer configuration.

#### 12.6.3.2. 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, JBoss Portal 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.

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 Portal 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 JBoss Portal 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 JBoss Portal via the **<consumer-name>** element. If you choose to provide a consumer name, please remember that this should uniquely identify your consumer.

## 12.6.4. Examples

Here is the configuration of the "self" producer as found in *default-wsrp.xml* with a cache expiring every five minutes:

```
<!DOCTYPE deployments PUBLIC "-//JBoss Portal//DTD WSRP Remote Producer Configuration 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-wsrp-consumer_2_6.dtd">
<?xml version="1.0" encoding="UTF-8"?>
<deployments>
   <deployment>
      <wsrp-producer id="self" expiration-cache="300">
         <!--
         we need to use the individual endpoint configuration because the configuration via
         wsdl forces an immediate attempt to access the web service description which is not
         available yet at this point of deployment
         -->
         <endpoint-config>
            <service-description-url>
              http://localhost:8080/portal-wsrp/ServiceDescriptionService
            </service-description-url>
            <markup-url>http://localhost:8080/portal-wsrp/MarkupService</markup-url>
            <registration-url>
              http://localhost:8080/portal-wsrp/RegistrationService
            </registration-url>
            <portlet-management-url>
              http://localhost:8080/portal-wsrp/PortletManagementService
            </portlet-management-url>
         </endpoint-config>
         <registration-data/>
      </wsrp-producer>
   </deployment>
</deployments>
```

```
```

Here is an example of a WSRP descriptor with a 2 minute caching time and manual definition of the endpoint URLs:

```
<!DOCTYPE deployments PUBLIC "-//JBoss Portal//DTD WSRP Remote Producer Configuration 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-wsrp-consumer_2_6.dtd">
<?xml version="1.0" encoding="UTF-8"?>
<deployments>
   <deployment>
      <wsrp-producer id="MyProducer" expiration-cache="120">
         <endpoint-config>
            <service-description-url>
             http://www.someproducer.com/portal-wsrp/ServiceDescriptionService
            </service-description-url>
            <markup-url>
             http://www.someproducer.com/portal-wsrp/MarkupService
            </markup-url>
            <registration-url>
             http://www.someproducer.com/portal-wsrp/RegistrationService
            </registration-url>
            <portlet-management-url>
             http://www.someproducer.com/portal-wsrp/PortletManagementService
            </portlet-management-url>
         </endpoint-config>
      </wsrp-producer>
   </deployment>
</deployments>
```

Here is an example of a WSRP descriptor with endpoint definition via remote WSDL file, registration data and cache expiring every minute:

```
<!DOCTYPE deployments PUBLIC "-//JBoss Portal//DTD WSRP Remote Producer Configuration 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-wsrp-consumer_2_6.dtd">
<?xml version="1.0" encoding="UTF-8"?>
<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>
```

# 12.7. Configuring JBoss Portal's WSRP Producer

## 12.7.1. Overview

You can configure the behavior of Portal's WSRP Producer by editing the *conf/config.xml* file found in *portal-ws-*

*rp.sar*. Several aspects can be modified with respects to whether registration is required for consumers to access the Producer's services.

## 12.7.2. Default configuration

Let's look at the default configuration:

```
<!DOCTYPE producer-configuration PUBLIC
          "-//JBoss Portal//DTD WSRP Local Producer Configuration 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-wsrp-producer_2_6.dtd">
<?xml version="1.0" encoding="UTF-8"?>
<producer-configuration>
   <registration-configuration fullServiceDescriptionRequiresRegistration="true">
      <registration-property-validator>
      org.jboss.portal.registration.policies.DefaultRegistrationPropertyValidator
      </registration-property-validator>
   </registration-configuration>
</producer-configuration>
```

The top element **<producer-configuration>** contains a single **<registration-configuration>** element that defines a *fullServiceDescritpionRequiresRegistration* attribute with the value "true". This configuration specifies that the WSRP producer requires registration to 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 **<registration-configuration>** element contains a **<registration-property-validator>** element. We will look into property validators in greater detail later in Section 12.7.4. 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.

## 12.7.3. Minimal producer configuration

Requiring registration is optional: if you don't need your producer to require consumer registration, the only thing you need to do is to provide an empty **<producer-configuration>** element in *portal-wsrp.sar/conf/config.xml*.

## 12.7.4. 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. This is done via the **<registration-configuration>** element. This element is optional as previously noted. It can be empty if you don't require registration properties. You can also specify whether or not registration is required in order for consumers to access the Producer's full service description, as noted in our discussion of the default configuration, above. This is done via the *fullServiceDescriptionRequiresRegistration* attribute, which is optional. Acceptable values for this attribute are "true" or "false", defaulting to "false" in which case the Producer will always return the full service description, whether the consumer asking for it is registered or not.

### 12.7.4.1. 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.jboss.portal.registration.RegistrationPolicy` and `org.jboss.portal.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 via the **<registration-policy>** element. Since we anticipate that most users will use the default registration policy, it is possible to use the **<registration-property-validator>** element and provide the class name of your custom property validator instead. Since specifying a property validator only makes sense in the context of the default registration policy, both elements are mutually exclusive.

### 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.

#### 12.7.4.2. Registration properties

You can also specify that consumers wishing to register with your producer provide acceptable values for one or several registration properties. This is accomplished by providing a **<registration-property-description>** element per required registration property. This element lets provide information about a given registration property such as its name, its type, the hint and label that will be sent to remote consumers.

### Note

At this time, only String (xsd:string) properties are supported. If your application requires more complex properties, please let us know.

## 12.7.5. Example

Here is an example of a producer configurations requiring registration, barring consumers from accessing its complete service description until they are correctly registered and requires consumers to provide acceptable values for two String registration properties named "name1" and "name2" respectively. The registration service will use the `com.example.portal.SomeCustomRegistrationPolicy` class for its registration policy.

```
<!DOCTYPE producer-configuration PUBLIC
          "-//JBoss Portal//DTD WSRP Local Producer Configuration 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-wsrp-producer_2_6.dtd">
<?xml version="1.0" encoding="UTF-8"?>
<producer-configuration>
  <registration-configuration fullServiceDescriptionRequiresRegistration="true">
    <registration-policy>com.example.portal.SomeCustomRegistrationPolicy</registration-policy>
    <registration-property-description>
      <name>name1</name>
      <type>xsd:string</type>
```

```
      <hint xml:lang="en" resourceName="resource.hint1">hint1</hint>
      <label xml:lang="en" resourceName="resource.label1">label1</label>
    </registration-property-description>
    <registration-property-description>
      <name>name2</name>
      <type>xsd:string</type>
      <hint xml:lang="en" resourceName="resource.hint2">hint2</hint>
      <label xml:lang="en" resourceName="resource.label2">label2</label>
    </registration-property-description>
  </registration-configuration>
</producer-configuration>
```

# 13

# Security

**Roy Russo** <roy@jboss.org>

**Julien Viet** <julien@jboss.org>

## 13.1. Securing Portal Objects

This section describes how to secure portal objects (portal instances, pages, and portlet instances), using the JBoss Portal *-object.xml descriptor OR portlet-instances.xml descriptor. View the User Guide for information on how to secure objects using the Management Portlet.

Securing portal objects declaratively, is done through the *-object.xml ( Section 6.2.1 ), for Portal Instances and Pages, or the portlet-instances.xml ( Section 6.2.2 ) for Portlet Instances. The portion you will be adding to each object is denoted by the <*security-constraint*> tag:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE deployments PUBLIC
   "-//JBoss Portal//DTD Portal Object 2.6//EN"
   "http://www.jboss.org/portal/dtd/portal-object_2_6.dtd">
<deployments>
   <deployment>
      <parent-ref>default</parent-ref>
      <if-exists>overwrite</if-exists>
      <properties/>
      <page>
         <page-name>MyPage</page-name>
         <window>
            <window-name>HelloWorldPortletPageWindow</window-name>
            <instance-ref>HelloWorldPortletPageInstance</instance-ref>
            <region>center</region>
            <height>0</height>
         </window>
         <security-constraint>
            <policy-permission>
               <action-name>viewrecursive</action-name>
               <unchecked/>
            </policy-permission>
         </security-constraint>
      </page>
   </deployment>
</deployments>
```

The based principle of the security mechanism is that everything is restricted unless you grant privileges. You grant privilege on a portal node by adding a security constraint as explained here:

```
<security-constraint>
```

```
   <policy-permission>
      <unchecked/>
      <action-name>viewrecursive</action-name>
   </policy-permission>
</security-constraint>
```

The example above will grant the view privilege to anyone (unchecked role) to the current object and any child object recursively.

The security contraint portion is worth taking a look at, in an isolated fashion. It allows you to secure a specific window/page/portal-instance based on a user's role.

**Role definition:** You must define a role that this security constraint will apply to. Possible values are:

- **<unchecked/>** Anyone can view this page.
- **<role-name>SOMEROLE</role-name>** Access to this page is limited to the defined role.

**Access Rights:** You must define the access rights given to the role defined. Possible values are:

- **view** Users can view the page.
- **viewrecursive** Users can view the page and child pages.
- **personalize** Users are able to view AND personalize the page.
- **personalizerecursive** Users are able to view AND personalize the page AND its child pages.

### Restricting access

Out of the box the default portal as a viewrecursive right for all the users, it means that whenever a page is added, this page will be seen by any user. To restrict access to this page, the default portal security constraint must be changed from viewrecursive to view, and viewrecursive security constraints must be added to its children so that they can be viewed except the one you want to restrict access to.

We provide three live samples of this descriptor, here Section 6.2.2 , Section 6.4.1 ,and Section 6.4.2

## 13.2. Securing the Content Management System

The JBoss Portal CMS system consists of a directory structure of Files organized unto their respective Folders. Both Files and Folders are considered to be CMS resources that can be secured based on portal Roles and/or Users.

The following features are supported by the fine grained security system of Portal CMS:

- You can associate "Read", "Write", and "Manage" Permissions at the CMS node level. (Both Files and Folders are treated as CMS nodes)
- The Permissions are propagated recursively down a folder hierarchy
- Any Permissions specified explicitly on the CMS Node overrides the policy inherited via recursive propagation
- You can manage the Permissions using the CMS Admin GUI tool via the newly added "Secure Node" feature

**Table 13.1. Portal CMS Permission Matrix:**

| Permissions | Allowed Actions | Implies |
|---|---|---|
| Read | Read Contents of Folder, File and its versions | N/A |
| Write | Create and Update new Folder and File | Read Access |
| Manage | Delete/Copy/Move/Rename Folders and Files | Read and Write Access |

### 13.2.1. CMS Security Configuration

The configuration for the CMS Security service is specified in the jboss-portal.sar/portal-cms.sar/META-INF/jboss-service.xml file. The portion of the configuration relevant for securing the CMS service is listed as follows:

```
<!--  interceptor factory where all cms interceptors are registered -->
<mbean
        code="org.jboss.portal.server.impl.invocation.JBossInterceptorStackFactory"
        name="portal:service=InterceptorStackFactory,type=Cms" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <depends-list optional-attribute-name="InterceptorNames">
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ACL
                </depends-list-element>
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ApprovalWorkflow
                </depends-list-element>
        </depends-list>
</mbean>

<!-- CMS Authorization Security Service -->
<mbean code="org.jboss.portal.cms.security.AuthorizationManagerImpl"
        name="portal:service=AuthorizationManager,type=cms" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <attribute name="JNDIName">
                java:portal/cms/AuthorizationManager
        </attribute>
        <depends optional-attribute-name="Provider"
                proxy-type="attribute">
                portal:service=AuthorizationProvider,type=cms
        </depends>
</mbean>
<mbean code="org.jboss.portal.cms.security.AuthorizationProviderImpl"
        name="portal:service=AuthorizationProvider,type=cms" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <depends optional-attribute-name="IdentityServiceController"
                proxy-type="attribute">
                portal:service=Module,type=IdentityServiceController
        </depends>
</mbean>
```

```
<!-- ACL Security Interceptor -->
<mbean code="org.jboss.portal.cms.impl.interceptors.ACLInterceptor"
        name="portal:service=Interceptor,type=Cms,name=ACL" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <attribute name="JNDIName">
                java:/portal/cms/ACLInterceptor
        </attribute>
        <attribute name="CmsSessionFactory">
                java:/portal/cms/CMSSessionFactory
        </attribute>
        <attribute name="IdentitySessionFactory">
                java:/portal/IdentitySessionFactory
        </attribute>
        <attribute name="DefaultPolicy">
                <policy>
                        <!-- permissions on the root cms node -->
                        <criteria name="path" value="/">
                                <permission name="cms" action="read">
                                        <role name="Anonymous" />
                                </permission>
                                <permission name="cms" action="write">
                                        <role name="User" />
                                </permission>
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                        <!-- permissions on the default cms node -->
                        <criteria name="path" value="/default">
                                <permission name="cms" action="read">
                                        <role name="Anonymous" />
                                </permission>
                                <permission name="cms" action="write">
                                        <role name="User" />
                                </permission>
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                        <!-- permissions on the private/protected node -->
                        <criteria name="path" value="/default/private">
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                </policy>
        </attribute>
        <depends optional-attribute-name="AuthorizationManager"
                proxy-type="attribute">
                portal:service=AuthorizationManager,type=cms
        </depends>
        <depends>portal:service=Hibernate,type=CMS</depends>
        <depends>
                portal:service=Module,type=IdentityServiceController
        </depends>
</mbean>
```

## 13.3. Authentication with JBoss Portal

JBoss Portal relies on Java EE for the authentication of users. The Java EE authentication has its advantages and drawbacks. The main motivation for using Java EE security is the integration with the application server and the operational environment in which the portal is deployed. The servlet layer provides already the authentication functionnality and obviously it is not a responsibility of the portal. Whenever a user is authenticated by the servlet layer its security identity is propagated throughout the call stack in the different layers of the Java EE stack. The weaknesses are the lack of an explicit logout mechanism and the lack of dynamicity in the mapping of URL as security resources. However JBoss Portal improves that behavior when it is possible to do so.

### 13.3.1. Authentication configuration

JBoss Portal can be seen before all as a web application and therefore inherits all the configuration mechanisms related to web applications. The main entry point of the whole portal is the *jboss-portal.sar/portal-server.war* deployment which is the web application that defines and maps the portal servlet. Here you can configure various things

- In the *WEB-INF/web.xml* you can change the authentication mode. The default authentication mechanism uses the form based authentication, however you can change it to any of the mechanism provided by the servlet specification.
- In the *WEB-INF/jboss-web.xml* you can change the security domain used by the portal. The default security domain used by the portal is *java:/jaas/portal*. That setting is specific to the JBoss Application Server and how it binds the Java EE security to the operational environment. A security domain is a scope defined at the Application Server Level and defines usually a JAAS authentication stack. The portal security domain authentication stack is defined in the *jboss-portal.sar/conf/login-config.xml* and is dynamically deployed with the portal. The JBoss Application Server documentation is certainly the best reference for that topic.
- The files *login.jsp* and *error.jsp* provide the pages used the form based authentication process. More information can be found in any good servlet documentation.

### 13.3.2. The portal servlet

The portal defines a single servlet to take care of all portal requests. The class name of that servlet is *org.jboss.portal.server.servlet.PortalServlet*. That servlet needs to be declared two times with different configurations otherwise the portal would not be able to know about some request details which are importants.

- *PortalServletWithPathMapping* is used for path mapping mappings.
- *PortalServletWithDefaultServletMapping* is used for the default servlet mapping.

The portal servlet is mapped four times with different semantics, the differences between the semantics are related to the transport layer. Each one of those for mappings will have the same request meaning for the portal beside the transport aspect. By default those mappings are

- /* : the default access, does not define any security constraint. This is the default access that everybody uses.
- */sec/** : the secured access, requires https usage. It is triggered when a portlet is defined as secure or when a secure portlet link is created. It requires the configuration of the https connector in JBoss Web. The JBoss Application Server documentation provides more information about it.

- */auth/** : the authenticated access, requires the user to be authenticated to be used.

- */authsec/** : combine thet two previous options into a single one.

Usually ones should not care much about those mappings as the portal will by itself switch to the most appropriate mapping.

## 13.4. Authorization with JBoss Portal

JBoss Portal defines a framework for authorization. The default implementation of that framework is based on the Java Authorization Contract for Containers (JACC) which is implemented by J2EE 1.4 Application Servers. This section of the documentation focuses on defining the framework and its usage and is not an attempt to define what authorization is or is not because it is out of scope of this context. Instead we will try to straightforwardly describe the framework and how it is used. No specific knowledge is expected about JACC although it is a recommanded read.

### 13.4.1. The portal permission

The *org.jboss.portal.security.PortalPermission* object is used to describe a permission for the portal. It extends the *java.security.Permission* class and any permission checked in the portal should extend the *PortalPermission* as well. That permission adds two fields to the *Permission* class

- uri : is a string which represents an URI of the resource described by the permission.

- collection : an object of class *org.jboss.portal.security.PortalPermissionCollection* which is used when the permission act as a container for other permissions. If that object exists then the uri field should be null as a portal permission represents an uri or acts as a container in an exclusive manner.

### 13.4.2. The authorization provider

The *org.jboss.portal.security.spi.provider.AuthorizationDomain* is an interface which provides access to several services.

```
public interface AuthorizationDomain
{
   String getType();
   DomainConfigurator getConfigurator();
   PermissionRepository getPermissionRepository();
   PermissionFactory getPermissionFactory();
}
```

- *org.jboss.portal.security.spi.provider.DomainConfigurator* provides configuration access to an authorization domain. The authorization schema is very simple as it consists of bindings between URI, roles and permissions.

- *org.jboss.portal.security.spi.provider.PermissionRepository* provides runtime access to the authorization domain. Usually it is used to retrieves the permissions for a specific role and URI. It is used at runtime by the framework to take security decisions.

- *org.jboss.portal.security.spi.provider.PermissionFactory* is a factory to instantiate permissions for the specific domain. It is used at runtime to create permissions objects of the appropriate type by the security framework.

### 13.4.3. Making a programmatic security check

Making a security check is an easy thing as it consists in created a permission of the appropriate type and make a check against the *org.jboss.portal.spi.auth.PortalAuthorizationManager* service. That service is used by the portal to make security checks. It is connected to the different authorization providers in order to take decisions at runtime based on the type of the permission. Access to that service is done through the *org.jboss.portal.spi.auth.PortalAuthorizationManagerFactory*. The factory is a portal service which is usually injected in other services like that

```
<?xml version="1.0" encoding="UTF-8"?>
<server>
   ...
   <mbean
      code='MyService"
      name="portal:service=MyService">
           <depends
         optional-attribute-name="PortalAuthorizationManagerFactory"
         proxy-type="attribute">portal:service=PortalAuthorizationManagerFactory</depends>
      ...
   </mbean>
   ...
</server>
```

It be injected in the servlet context of a war file in the file *WEB-INF/jboss-portlet.xml*

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE portlet-app PUBLIC
   "-//JBoss Portal//DTD JBoss Portlet 2.6//EN"
   "http://www.jboss.org/portal/dtd/jboss-portlet_2_6.dtd">
<portlet-app>
   ...
   <service>
      <service-name>PortalAuthorizationManagerFactory</service-name>
      <service-class>
      org.jboss.portal.security.spi.auth.PortalAuthorizationManagerFactory
      </service-class>
      <service-ref>:service=PortalAuthorizationManagerFactory</service-ref>
   </service>
   ...
</portlet-app>
```

Here is an example of how a security check is made for a specific page

```

PortalAuthorizationManager pam = factory.getManager();
PortalObjectId id = page.getId();
PortalObjectPermission perm = new PortalObjectPermission(id, PortalObjectPermission.VIEW_MASK);
if (pam.checkPermission(perm) == false)
{
   System.out.println("Current is not authorization to view page " + id);
}
```

### 13.4.4. Configuring an authorization domain

Configuring a domain can be done through the *DomainConfigurator* interface

```
public interface DomainConfigurator
{
   Set getSecurityBindings(String uri);
   void setSecurityBindings(String uri, Set securityBindings)
           throws SecurityConfigurationException;
   void removeSecurityBindings(String uri) throws SecurityConfigurationException;
}
```

The various methods of that interface allows to configure security bindings for a given resource where a resource is naturally identified by an URI. The *org.jboss.portal.security.RoleSecurityBinding* object is an object which encapsulate a role name and a set of actions bound to this role.

```
RoleSecurityBinding binding1 = new RoleSecurityBinding(Collections.singleton("view"), "Admin");
RoleSecurityBinding binding2 = new RoleSecurityBinding(Collections.singleton("view"), "User");
Set bindings = new HashSet();
bindings.add(binding1);
bindings.add(binding2);
configurator.setSecurityBinding(pageURI, bindings);
```

# 14

# JBoss Portal Identity Management

**Boleslaw Dawidowicz** `<boleslaw dot dawidowicz at redhat dot com>`

This chapter addresses identity management in JBoss Portal 2.6

## 14.1. Identity management API

### Warning

JBoss Portal Identity API can evolve over time and is not officially supported.

Since JBoss Portal 2.6 there are 4 identity services and 2 identity related interfaces. The goal of having such a fine grained API is to enable flexible implementations based on different identity storage like relational databases or LDAP servers. The Membership service takes care of managing the relationship between user objects and role objects. The User Profile service is responsible for managing the profile of a user, it has database and LDAP implementations as well as a mode that combines data from both.

- The **org.jboss.portal.identity.User** interface represents a user and exposes the following operations:

```
/** The user identifier. */
public Object getId();

/** The user name. */
public String getUserName();

/** Set the password using proper encoding. */
public void updatePassword(String password);

/** Return true if the password is valid. */
public boolean validatePassword(String password);
```

### Warning

Important Note! The proper usage of getId() method is:

```
// Always use it like this:
user.getId().toString();

// Do not use it like this:

// We would get a Long object if we are using the database implementation
(Long)user.getId();
```

```
// We would get a String with an LDAP server
(String)user.getId();
```

This is because the ID value depends on the User implementation. It'll probably be String object with the LDAP implementation and a Long object with the database implementation but it could be something else if one has chosen to make its own implementation.

- The **org.jboss.portal.identity.Role** interface represents a Role and exposes the following operations:

```
/** The role identifier. */
public Object getId();

/** The role name used in security rules. This name can not be modified */
public String getName();

/** The role display name used on screens. This name can be modified */
public String getDisplayName();

/** */
public void setDisplayName(String name);
```

- The **org.jboss.portal.identity.UserModule** interface exposes operations for users management:

```
/**Retrieve a user by its name.*/
User findUserByUserName(String userName)
   throws IdentityException, IllegalArgumentException, NoSuchUserException;

/**Retrieve a user by its id.*/
User findUserById(Object id)
   throws IdentityException, IllegalArgumentException, NoSuchUserException;

/**Retrieve a user by its id.*/
User findUserById(String id)
   throws IdentityException, IllegalArgumentException, NoSuchUserException;

/** Creates a new user with the specified name.*/
User createUser(String userName, String password)
   throws IdentityException, IllegalArgumentException;

/** Remove a user.*/
void removeUser(Object id)
   throws IdentityException, IllegalArgumentException;

/** Get a range of users.*/
Set findUsers(int offset, int limit)
   throws IdentityException, IllegalArgumentException;

/** Get a range of users.*/
Set findUsersFilteredByUserName(String filter, int offset, int limit)
   throws IdentityException, IllegalArgumentException;

/**Returns the number of users.*/
int getUserCount() throws IdentityException, IllegalArgumentException;
```

- The **org.jboss.portal.identity.RoleModule** interface exposes operations for roles management:

```
/** Retrieves a role by its name*/
Role findRoleByName(String name)
```

```
   throws IdentityException, IllegalArgumentException;

/**Retrieve a collection of role from the role names.*/
Set findRolesByNames(String[] names)
   throws IdentityException, IllegalArgumentException;

/** Retrieves a role by its id.*/
Role findRoleById(Object id)
   throws IdentityException, IllegalArgumentException;

/** Retrieves a role by its id.*/
Role findRoleById(String id)
   throws IdentityException, IllegalArgumentException;

/** Create a new role with the specified name.*/
Role createRole(String name, String displayName)
   throws IdentityException, IllegalArgumentException;

/** Remove a role.*/
void removeRole(Object id)
   throws IdentityException, IllegalArgumentException;

/** Returns the number of roles. */
int getRolesCount()
   throws IdentityException;

/** Get all the roles */
Set findRoles()
   throws IdentityException;/** Retrieves a role by its name*/
Role findRoleByName(String name)
   throws IdentityException, IllegalArgumentException;

/**Retrieve a collection of role from the role names.*/
Set findRolesByNames(String[] names)
   throws IdentityException, IllegalArgumentException;

/** Retrieves a role by its id.*/
Role findRoleById(Object id)
   throws IdentityException, IllegalArgumentException;

/** Retrieves a role by its id.*/
Role findRoleById(String id)
   throws IdentityException, IllegalArgumentException;

/** Create a new role with the specified name.*/
Role createRole(String name, String displayName)
   throws IdentityException, IllegalArgumentException;

/** Remove a role.*/
void removeRole(Object id)
   throws IdentityException, IllegalArgumentException;

/** Returns the number of roles. */
int getRolesCount()
   throws IdentityException;

/** Get all the roles */
Set findRoles() throws IdentityException;
```

- The **MembershipModule** interface exposes operations for obtaining or managing relationships beetween users and roles. The role of this service is to decouple relationship information from user and roles. Indeed while user role relationship is pretty straightforward with a relational database (using a many to many relationship with an intermediary table), with an LDAP server there a different ways to define relationships between users and roles.

```
/** Return the set of role objects that a given user has.*/
Set getRoles(User user) throws IdentityException, IllegalArgumentException;

Set getUsers(Role role) throws IdentityException, IllegalArgumentException;

/** Creates a relationship beetween a role and set of users. Other roles that have
    assotiontions with those users remain unaffected.*/
void assignUsers(Role role, Set users) throws IdentityException, IllegalArgumentException;

/** Creates a relationship beetween a user and set of roles. This operation will erase any
    other assotientions beetween the user and roles not specified in the provided set.*/
void assignRoles(User user, Set roles) throws IdentityException, IllegalArgumentException;

/** Returns role members based on rolename - depreciated method ethod here only
    for compatibility with old RoleModule interface */
Set findRoleMembers(String roleName, int offset, int limit, String userNameFilter)
   throws IdentityException, IllegalArgumentException;
```

- The **UserProfileModule** interface exposes operations to access and manage informations stored in User profile:

```
public Object getProperty(User user, String propertyName)
   throws IdentityException, IllegalArgumentException;

public void setProperty(User user, String name, Object property)
   throws IdentityException, IllegalArgumentException;

public Map getProperties(User user)
   throws IdentityException, IllegalArgumentException;

public ProfileInfo getProfileInfo()
   throws IdentityException;
```

## Warning

UserProfileModule.getProperty() method returns an Object. In most cases with DB backend it will always be String object. But normally you should check what object will be retrieved using getProfileInfo() method.

- The **ProfileInfo** interface can be obtained using the **UserProfileModule** and exposes meta information of a profile:

```
/** Returns a Map o PropertyInfo objects describing profile properties */
public Map getPropertiesInfo();

public PropertyInfo getPropertyInfo(String name);
```

- **PropertyInfo** interface expose methods to obtain information about accessible property in User profile

```
public static final String ACCESS_MODE_READ_ONLY = "read-only";
public static final String ACCESS_MODE_READ_WRITE = "read-write";
public static final String USAGE_MANDATORY = "mandatory";
public static final String USAGE_OPTIONAL = "optional";
public static final String MAPPING_DB_TYPE_COLUMN = "column";
public static final String MAPPING_DB_TYPE_DYNAMIC = "dynamic";

public String getName();
```

```
public String getType();

public String getAccessMode();

public String getUsage();

public LocalizedString getDisplayName();

public LocalizedString getDescription();

public String getMappingDBType();

public String getMappingLDAPValue();

public String getMappingDBValue();

public boolean isMappedDB();

public boolean isMappedLDAP();
```

### 14.1.1. How to obtain identity modules services ?

The advocated way to get a reference to the identity modules is by using JNDI:

```
import org.jboss.portal.identity.UserModule;
import org.jboss.portal.identity.RoleModule;
import org.jboss.portal.identity.MembershipModule;
import org.jboss.portal.identity.UserProfileModule;

[...]

(UserModule)new InitialContext().lookup("java:portal/UserModule");
(RoleModule)new InitialContext().lookup("java:portal/RoleModule");
(MembershipModule)new InitialContext().lookup("java:portal/MembershipModule");
(UserProfileModule)new InitialContext().lookup("java:portal/UserProfileModule");
```

Another way to do this is, if you are fimiliar with JBoss Microkernel architecture is to get the **IdentityServiceController** mbean. You may want to inject it into your services like this:

```
<depends optional-attribute-name="IdentityServiceController" proxy-type="attribute">
   portal:service=Module,type=IdentityServiceController
</depends>
```

or simply obtain in your code by doing a lookup using the **portal:service=Module,type=IdentityServiceController** name. Please refer to the JBoss Application Server documentation if you want to learn more about service MBeans. Once you obtained the object you can use it:

```
(UserModule)identityServiceController.getIdentityContext()
            .getObject(IdentityContext.TYPE_USER_MODULE);

(RoleModule)identityServiceController.getIdentityContext()
            .getObject(IdentityContext.TYPE_ROLE_MODULE);

(MembershipModule)identityServiceController.getIdentityContext()
            .getObject(IdentityContext.TYPE_MEMBERSHIP_MODULE);
```

```
(UserProfileModule)identityServiceController.getIdentityContext()
            .getObject(IdentityContext.TYPE_USER_PROFILE_MODULE);
```

### 14.1.2. API changes since 2.4

Because in JBoss Portal 2.4 there were only **UserModule** , **RoleModule** , **User** and **Role** interfaces some API usages changed. Here are the most important changes you will need to aply to your code while migrating your aplication to 2.6:

- For the **User** interface:

```
// Instead of: user.getEnabled()
userProfileModule.getProperty(user, User.INFO_USER_ENABLED);

// Instead of: user.setEnabled(value)
userProfileModule.setProperty(user, User.INFO_USER_ENABLED, value);

// In a similar way you should change rest of methods that are missing in User interface
// in 2.6 by the call to the UserProfileModule

// Instead of: user.getProperties()
userProfileModule.getProperties(user);

// Instead of: user.getGivenName()
userProfileModule.getProperty(user, User.INFO_USER_NAME_GIVEN);

// Instead of: user.getFamilyName()
userProfileModule.getProperty(user, User.INFO_USER_NAME_FAMILY);

// Instead of: user.getRealEmail()
userProfileModule.getProperty(user, User.INFO_USER_EMAIL_REAL);

// Instead of: user.getFakeEmail()
userProfileModule.getProperty(user, User.INFO_USER_EMAIL_FAKE);

// Instead of: user.getRegistrationDate()
userProfileModule.getProperty(user, User.INFO_USER_REGISTRATION_DATE);

// Instead of: user.getViewRealEmail()
userProfileModule.getProperty(user, User.INFO_USER_VIEW_EMAIL_VIEW_REAL);

// Instead of: user.getPreferredLocale()
userProfileModule.getProperty(user, User.INFO_USER_LOCALE);

// Instead of: user.getSignature()
userProfileModule.getProperty(user, User.INFO_USER_SIGNATURE);

// Instead of: user.getLastVisitDate()
userProfileModule.getProperty(user, User.INFO_USER_LAST_LOGIN_DATE);
```

- The **RoleModule** interface:

```
// Instead of
// RoleModule.findRoleMembers(String roleName, int offset, int limit, String userNameFilter)
//    throws IdentityException;
membershipModule.findRoleMembers(String roleName, int offset, int limit,
```

```
                                                    String userNameFilter)

// Instead of
// RoleModule.setRoles(User user, Set roles) throws IdentityException;
membershipModule.assignRoles(User user, Set roles)

// Instead of
// RoleModule.getRoles(User user) throws IdentityException;
membershipModule.getRoles(User user)
```

## 14.2. Identity configuration

In order to understand identity configuration you need to understand its architecture. Different identity services like UserModule, RoleModule and etc are just plain java classes that are instantiated and exposed by the portal. So an *example* of UserModule service could be a plain java bean object that would be:

- **Instantiated** using reflection
- **Initialized/Started** by invoking some methods
- **Registered/Exposed** using JNDI and/or mbeans (JBoss Microkernel) services, so other services of the portal can use it
- **Managed** in the matter of lifecycle - so it'll be stopped and unregistered during portal shutdown

As you see from this point of view, configuration just specifies what java class will be used and how it should be used by portal as a service.

> **Note**
>
> We use JBoss Microcontainer internally to manage the sub system made of those components so if you are interested in implementing custom services - look on the methods that are used by this framework.

In JBoss Portal we provide a very flexible configuration. It is very easy to rearrange and customize services, provide alternative implementations, extend the existing ones or provide a custom identity model.

To grasp the full picture of the configuration of identity services let's start from its root component. Whole configuration and setup of identity components is done by the **IdentityServiceController** service. It brings to life and registers all other services such as UserModule, RoleModule, MembershipModule and UserProfileModule. **IdentityServiceController** is defined in *jboss-portal.sar/META-INF/jboss-service.xml*

```
<mbean
   code="org.jboss.portal.identity.IdentityServiceControllerImpl"
   name="portal:service=Module,type=IdentityServiceController"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <depends>portal:service=Hibernate</depends>
   <attribute name="JndiName">java:/portal/IdentityServiceController</attribute>
   <attribute name="RegisterMBeans">true</attribute>
   <attribute name="ConfigFile">conf/identity/identity-config.xml</attribute>
   <attribute name="DefaultConfigFile">conf/identity/standardidentity-config.xml</attribute>
</mbean>
```

We can specify a few options here:

- **RegisterMBeans** - defines if IdentityServiceController should register components which are instantiated as mbeans
- **ConfigFile** - defines the location of the main identity services configuration file. It describes and configures all the components like UserModule, RoleModule... that need to be instantiated
- **DefaultConfigFile** - defines the location of the configuration file containing the default values. For each component defined in **ConfigFile**, the IdentityServiceController will obtain a set of default options from this file. That helps to keep the main main configuration file simple, short and easy to read. Potentially it provides more powerful customizations.

## 14.2.1. Main configuration file architecture (identity-config.xml)

The file describing portal identity services contains three sections:

```
<identity-configuration>
   <datasources>
      <!-- Datasources section -->
      <datasource> ... </datasource>
      <datasource> ... </datasource>
      ...
   </datasources>
   <modules>
      <!-- Modules section -->
      <module> ... </module>
      <module> ... </module>
      ...
   </modules>
   <options>
      <!-- Options section -->
      <option-group> ... </option-group>
      <option-group> ... </option-group>
      ...
   </options>
</identity-configuration>
```

By default you can find it in *jboss-portal.sar/conf/identity/identity-config.xml*

### 14.2.1.1. Datasources

This section defines datasource components. They will be processed and instantiated before components in **Module** section, so they will be ready to serve them.

> **Note**
>
> This section isn't used with Database configuration as in JBoss Portal services exposing Hibernate are defined separately. It is used by LDAP configuration and we will use it as an example

```
<datasource>
   <name>LDAP</name>
   <service-name>portal:service=Module,type=LDAPConnectionContext</service-name>
   <class>org.jboss.portal.identity.ldap.LDAPConnectionContext</class>
```

```
   <config>
      <option>
         <name>host</name>
         <value>jboss.com</value>
      </option>
      <option>
         <name>port</name>
         <value>10389</value>
      </option>
      <option>
         <name>adminDN</name>
         <value>cn=Directory Manager</value>
      </option>
      <option>
         <name>adminPassword</name>
         <value>xxxxx</value>
      </option>

      <!-- Other options here.... -->

   </config>
</datasource>
```

### Note

If you look into JBoss Portal configuration files you will find that <service-name/> and <class/> are specified in **DefaultConfigFile** and not in **ConfigFile**. So here is how it works: those two will be picked up from default configuration. The same rule is effective for the options - additional options will be picked up from default configuration. What is linking configuration in those two files is the **<name>** tag.

#### 14.2.1.2. Modules

Modules are core service components like UserModule, RoleModule and etc.

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>User</type>
   <implementation>DB</implementation>

   <!--name of service and class for creating mbean-->
   <service-name>portal:service=Module,type=User</service-name>
   <class>org.jboss.portal.identity.db.HibernateUserModuleImpl</class>

   <!--set of options that are in the instantiated object-->
   <config>
      <option>
         <name>sessionFactoryJNDIName</name>
         <value>java:/portal/IdentitySessionFactory</value>
      </option>
      <option>
         <name>jNDIName</name>
         <value>java:/portal/UserModule</value>
      </option>
   </config>
</module>
```

- **implementation** - defines the scope under which the configuration for different implementations of modules **type**s resides. It enables to define the default options of the configuration of the different implementations of same module types in one configuration file.

- **type** - must be unique name across all modules defined in the main configuration file. This is important as module will be stored with such name within IdentityContext registry at runtime. Standard names are used (User, Role, Membership, UserProfile). Together with **implementation** will create unique pair within file with default configuration values.
- **service-name** - will be used for the name when registered as an MBean.
- **class** - java class that will be use to instantiate the module.
- **config** - contains options related to this module

> **Note**
>
> Here you can easily see the whole idea about having two config files - main one and the one with default values. The above code snippet with User module comes from **standardidentity-config.xml**, so the file that defines default configuration values. Because of this in the main configuration file the definition of User module will be as short as:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>User</type>
   <implementation>DB</implementation>
   <config/>
</module>
```

> As you can see we specify only the type and the implementation - all the other values (service-name, class and set of options) are read from default configuration. But remember that you can still overwrite any of those values in the main config simply by overriding them.

#### 14.2.1.3. Options

This section provides common options that are accessible by identity modules. We set options here that may need to be shared. They are grouped, and can have many values:

```
<options>
<!--Common options section-->
<option-group>
   <group-name>common</group-name>
   <option>
      <name>userCtxDN</name>
      <value>ou=People,dc=example,dc=com</value>
   </option>
   <option>
      <name>uidAttributeID</name>
      <value>uid</value>
   </option>
   <option>
      <name>passwordAttributeID</name>
      <value>userPassword</value>
   </option>
   <option>
      <name>roleCtxDN</name>
      <value>ou=Roles,dc=example,dc=com</value>
   </option>
   <option>
      <name>ridAttributeId</name>
      <value>cn</value>
```

```
   </option>
   <option>
      <name>roleDisplayNameAttributeID</name>
      <value>cn</value>
   </option>
   <option>
      <name>membershipAttributeID</name>
      <value>member</value>
   </option>
   <option>
      <name>membershipAttributeIsDN</name>
      <value>true</value>
   </option>
</option-group>
<option-group>
   <group-name>userCreateAttibutes</group-name>
   <option>
      <name>objectClass</name>
      <value>top</value>
      <value>uidObject</value>
      <value>person</value>
      <value>inetUser</value>
   </option>
   <!--Schema requires those to have initial value-->
   <option>
      <name>cn</name>
      <value>none</value>
   </option>
   <option>
      <name>sn</name>
      <value>none</value>
   </option>
</option-group>
```

**Note**

In this section we use the same inheritance mechanism. When an option is not set, its value will be read from the default config file. But this also means that you may need to overwrite some values that are specific to your LDAP architecture. All the options will be described along with module implementations that use them.

## 14.3. User profile configuration

UserProfileModule has additional configuration file that defines user properties. It is specified in configuration in:

```
      <module>
        <type>UserProfile</type>
        <implementation>DELEGATING</implementation>

        (...)

        <config>

           (...)

           <option>
              <name>profileConfigFile</name>
              <value>conf/identity/profile-config.xml</value>
           </option>
```

```
         </config>
      </module>
```

This means that you can configure user profile in *jboss-portal.sar/conf/identity/profile-config.xml*

```
<profile>

   <property>
      <name>user.name.nickName</name>
      <type>java.lang.String</type>
      <access-mode>read-only</access-mode>
      <usage>mandatory</usage>
      <display-name xml:lang="en">Name</display-name>
      <description xml:lang="en">The user name</description>
      <mapping>
         <database>
            <type>column</type>
            <value>jbp_uname</value>
         </database>
      </mapping>
   </property>

   <property>
      <name>user.business-info.online.email</name>
      <type>java.lang.String</type>
      <access-mode>read-write</access-mode>
      <usage>mandatory</usage>
      <display-name xml:lang="en">Email</display-name>
      <description xml:lang="en">The user real email</description>
      <mapping>
         <database>
            <type>column</type>
            <value>jbp_realemail</value>
         </database>
         <ldap>
            <value>mail</value>
         </ldap>
      </mapping>
   </property>

   <property>
      <name>portal.user.location</name>
      <type>java.lang.String</type>
      <access-mode>read-write</access-mode>
      <usage>optional</usage>
      <display-name xml:lang="en">Location</display-name>
      <description xml:lang="en">The user location</description>
      <mapping>
         <database>
            <type>dynamic</type>
            <value>portal.user.location</value>
         </database>
      </mapping>
   </property>

   (...)

</properties>
```

Configuration file contains properties definition that can be retrieved using the **PropertyInfo** interface. Each property used in portal has to be defined here.

### Note

Some information provided here can have a large impact on the behaviour of the UserProfileModule. For instance *access-mode* can be made read-only and the value provided in *type* will be checked during *setProperty()/getProperty()* operations. On the other hand tags like *usage*, *description* or *display-name* have mostly informational meaning at the moment and are used by the management tools at runtime.

- **name** - property name. This value will be used to refer to the property in *UserProfileModule*
- **type** - java type of property. This type will be checked when in *UserProfileModule* methods invocation.
- **access-mode** - possible values are *read-write* and *read-only*
- **usage** - property usage can be *mandatory* or *optional*.
- **display-name** - property display name.
- **description** - description of property.
- **mapping** - defines how property is mapped in the underlaying storage mechanism. It can be mapped in *database* either as a *column* or *dynamic* value. It can also be mapped as *ldap* attribute.

### Note

In current implementation *column* and *dynamic* mappings have the same effect, as database mappings are defined in hibernate configuration.

### Note

Property can have both *ldap* and *database* mappings. In such situation when LDAP support is enabled *ldap* mapping will take precedense. Also even when using LDAP some properties will be mapped to LDAP and some to database. Its because LDAP schema doesn't support all attributes proper to for portal properties. To solve this we have **DelegatingUserProfileModuleImpl** that will delegate method invocation to *ldap* or *database* related *UserProfile* module. When *LDAP* support is enabled and property need to be stored in database user will be synchronized into database when needed. This behaviour can be configured.

## 14.4. Identity modules implementations

### Note

Identity modules implementations related to LDAP are described in LDAP chapter

### 14.4.1. Database modules

JBoss portal comes with a set of database related identity modules implementations done using Hibernate - those are configured by default. Those are not very configurable in *identity-config.xml* file. The reason is that to keep backwards compatibility of database schema with previous portal version, we reused most of hibernate implementation. If you want to tweak the hibernate mappings you should look into files in **jboss-portal.sar/conf/hibernate**. Also those modules rely on hibernate *SessionFactory* components that are created in *SessionFactoryBinder* mbeans

defined in *jboss-portal.sar/META-INF/jboss-service.xml*

Classes implementing identity modules:

- **org.jboss.portal.identity.db.HibernateUserModuleImpl** - implementaing *UserModule* interface
- **org.jboss.portal.identity.db.HibernateRoleModuleImpl** - implementaing *RoleModule* interface
- **org.jboss.portal.identity.db.HibernateMembershipModuleImpl** - implementaing *MembershipModule* interface
- **org.jboss.portal.identity.db.HibernateUserProfileModuleImpl** - implementaing *UserProfileModule* interface

For each of those modules you can alter two config options:

- *sessionFactoryJNDIName* - JNDI name under which hibernate SessionFactory object is registered
- *jNDIName* - JNDI name under which this module should be registered

## 14.4.2. Delegating UserProfile module

Delegating UserProfileModule implementation has very specific role. When we use storage mechanism like LDAP we may not be able to map all user properties into LDAP attributes because of schema limitations. To solve this problem we still can use the database to store user properties that do not exist in the LDAP schema. Delegating user profile module will recognize if a property is mapped as **ldap** or **database** and delegate *setProperty()/getProperty()* method invocation to proper module implementation. This is implemented in **org.jboss.portal.identity.DelegatingUserProfileModuleImpl**. If property is mapped either as **ldap** and **database** the **ldap** mapping will have higher priority.

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>UserProfile</type>
   <implementation>DELEGATING</implementation>

   <!--name of service and class for creating mbean-->
   <service-name>portal:service=Module,type=UserProfile</service-name>
   <class>org.jboss.portal.identity.DelegatingUserProfileModuleImpl</class>
   <!--set of options that are set in instantiated object-->
   <config>
      <option>
         <name>jNDIName</name>
         <value>java:/portal/UserProfileModule</value>
      </option>
      <option>
         <name>dbModuleJNDIName</name>
         <value>java:/portal/DBUserProfileModule</value>
      </option>
      <option>
         <name>profileConfigFile</name>
         <value>conf/identity/profile-config.xml</value>
      </option>
   </config>
</module>
```

Module options are:

- **dbModuleJNDIName** - JNDI name under which database implementation of UserProfileModule is registered.
- **ldapModuleJNDIName** - JNDI name under which ldap implementation of UserProfileModule is registered.
- **profileConfigFile** - configuration file for user properties.

### 14.4.3. Database UserProfile module implementation

Because of the behaviour described in the previous section, database UserProfileModule requires some special features. If a user is present in LDAP server but a writable property isn't mapped as an LDAP attribute, such property requires to be stored in the database. In order to achieve such result the user need to be synchronized from ldap into the database first.

Class *org.jboss.portal.identity.db.HibernateUserProfileModuleImpl* has additional synchronization features. Here are the options:

- **synchronizeNonExistingUsers** - when set to "true" if the user subject to the operation does not exist, then it will created it in database. By default it is "true".
- **acceptOtherImplementations** - if set to "true" module will accept user objects other than *org.jboss.portal.identity.db.HibernateUserImpl*. This is needed to enable cooperation with UserModule implementations other than *org.jboss.portal.identity.db.HibernateUserModuleImpl*. The default value is set "true".
- **defaultSynchronizePassword** - if this option is set, the value will be used as a password for synchronized user.
- **randomSynchronizePassword** - if this option is set to "true" synchronized user will have random generated password. This is mostly used for the security reasons. Default value is "false".
- **sessionFactoryJNDIName** - JNDI name under which this user will be registered.
- **profileConfigFile** - file with user profile configuration. If this option is not set, and we use delegating UserProfileModule, profile configuration will be obtained from it.

# 15

# Authentication and Authorization

**Boleslaw Dawidowicz** `<boleslaw dot dawidowicz at redhat dot com>`

This chapter describes the authentication mechanisms in JBoss Portal

## 15.1. Authentication in JBoss Portal

JBoss Portal is heavily standard based so it leverages *Java Authentication and Authorization Service (JAAS)* in JBoss Application Server. Because of this it can be configured in a very flexible manner and other authentication solutions can be plugged in easily. To better understand authentication mechanisms in JBoss Portal please refer to Security chapter. To learn more about JAAS look for proper documentation on Java security [1] website. To learn more about security in JBoss Application Server please read JBossSX [2] documentation.

### 15.1.1. Configuration

You can configure the JAAS authentication stack in *jboss-portal.sar/conf/login-config.xml*. It is important to remember that authorisation in portal starts at the JAAS level - configured *LoginModule*s apply proper *Principal* objects representing the roles of authenticated user. As you can see in *jboss-portal.sar/portal-server.war/WEB-INF/web.xml* portal servlet is secured with specified role ("*Authenticated*"). In the default portal configuration this role is dynamically added by *IdentityLoginModule*. If you reconfigure the default JAAS authentication chain with other *LoginModule* implementations, you should remember that you must deal with that security constraints in order to be able to access portal. For example if you place only one *LoginModule* that will authenticate users against LDAP server you may consider adding all users in your LDAP tree to such role.

## 15.2. JAAS Login Modules

JBoss Portal comes with a few implementations of JAAS *LoginModule* interface

### 15.2.1. org.jboss.portal.identity.auth.IdentityLoginModule

This is the standard portal LoginModule implementation that uses portal identity modules in order to search users and roles. By default it is the only configured LoginModule in the portal authentication stack. Its behaviour can be altered with the following options:

[1] http://java.sun.com/javase/6/docs/technotes/guides/security/
[2] http://wiki.jboss.org/wiki/Wiki.jsp?page=JBossSX

- **userModuleJNDIName** - JNDI name of portal UserModule.
- **roleModuleJNDIName** - JNDI name of portal RoleModule.
- **membershipModuleJNDIName** - JNDI name of portal MembershipModule.
- **additionalRole** - additional user *Principal* that will be added to user *Subject*. This is important as in default portal configuration it is the role that portal servlet is secured with.
- **havingRole** - only users belonging to role specified with this option will be authenticated.
- **unauthenticatedIdentity** - the principal to use when a null username and password are seen.

> **Note**
> IdentityLoginModule extends org.jboss.security.auth.spi.UsernamePasswordLoginModule so if you are familiar with JBossSX you can apply few other options like "password-stacking". Please refer to JBossSX documentation.

## 15.2.2. org.jboss.portal.identity.auth.DBIdentityLoginModule

This *LoginModule* implementation extends JBossSX *org.jboss.security.auth.spi.DatabaseServerLoginModule* and can be used to authenticate against Database. The main purpose of this module is to be configured directly against portal database (instead of using portal identity modules like in IdentityLoginModule). So if you are using custom LoginModule implementation you can place this module with "sufficient" flag. This can be extremely useful. For example if you authenticate against LDAP server using JBossSX *LdapLoginModule* you can fallback to users present in portal database and not present in LDAP like "admin" user. Please look into this [3] wiki page to learn more about *DatabaseServerLoginModule* configuration

Options are:

- **dsJndiName** - The name of the DataSource of the database containing the Principals and Roles tables
- **principalsQuery** - The prepared statement query, equivalent to: *"select Password from Principals where PrincipalID=?"*
- **rolesQuery** - The prepared statement query, equivalent to: *"select Role, RoleGroup from Roles where PrincipalID=?"*
- **hashAlgorithm** - The name of the *java.security.MessageDigest* algorithm to use to hash the password. There is no default so this option must be specified to enable hashing. When hashAlgorithm is specified, the clear text password obtained from the *CallbackHandler* is hashed before it is passed to UsernamePasswordLoginModule.validatePassword as the inputPassword argument. The expectedPassword as stored in the users.properties file must be comparably hashed.
- **hashEncoding** - The string format for the hashed pass and st be either "base64" or "hex". Base64 is the default.
- **additionalRole** - additional user *Principal* that will be added to user *Subject*.

Configuration using portal database will look like this:

[3] http://wiki.jboss.org/wiki/Wiki.jsp?page=DatabaseServerLoginModule

```
<login-module code = "org.jboss.portal.identity.auth.DBIdentityLoginModule"
              flag="sufficient">
   <module-option name="dsJndiName">java:/PortalDS</module-option>
   <module-option name="principalsQuery">
     SELECT jbp_password FROM jbp_users WHERE jbp_uname=?
   </module-option/>
   <module-option name="rolesQuery">
     SELECT jbp_roles.jbp_name, 'Roles' FROM  jbp_role_membership INNER JOIN
     jbp_roles ON jbp_role_membership.jbp_rid = jbp_roles.jbp_rid INNER JOIN jbp_users ON
     jbp_role_membership.jbp_uid = jbp_users.jbp_uid WHERE jbp_users.jbp_uname=?
   </module-option>
   <module-option name="hashAlgorithm">MD5</module-option>
   <module-option name="hashEncoding">HEX</module-option>
   <module-option name="additionalRole">Authenticated</module-option>
</login-module>
```

**Note**

SQL query should be in single line. This code snipped was formatted like this only to fit documentation page.

### 15.2.3. org.jboss.portal.identity.auth.SynchronizingLdapLoginModule

This module can be used instead of the IdentityLoginModule to bind to LDAP. *org.jboss.portal.identity.auth.SynchronizingLDAPLoginModule* class is a wrapper around LdapLoginModule [4] from JBossSX. It extends it so all configuration that can be applied to *LdapExtLoginModule* remains valid here. For a user that was authenticated successfully it will try to call the identity modules from portal, then check if such user exists or not, and if does not exist it will try to create it. Then for all roles assigned to this authenticated principal it will try to check and create them using identity modules. This behaviour can be altered using following options:

- **userModuleJNDIName** - JNDI name of portal UserModule. This option is *obligatory* if *synchronizeIdentity* option is set to *true*
- **roleModuleJNDIName** - JNDI name of portal RoleModule. This option is *obligatory* if *synchronizeIdentity* and *synchronizeRoles* options are set to *true*
- **membershipModuleJNDIName** - JNDI name of portal MembershipModule. This option is *obligatory* if *synchronizeIdentity* and *synchronizeRoles* options are set to *true*
- **userProfileModuleJNDIName** - JNDI name of portal UserProfileModule. This option is *obligatory* if *synchronizeIdentity* option is set to *true*
- **synchronizeIdentity** - if set to *true* module will check if successfully authenticated user exist in portal and if not it will try to create it. If user exists module will update its password to the one that was just validated.
- **synchronizeRoles** - if set to *true* module will iterate over all roles assigned to authenticated user and for each it will try to check if such role exists in portal and if not it will try to create it. This option is checked only if *synchronizeIdentity* is set to true;

[4] http://wiki.jboss.org/wiki/Wiki.jsp?page=LdapLoginModule

- **additionalRole** - module will add this role name to the group of principals assigned to the authenticated user.
- **defaultAssignedRole** - if *synchronizeIdentity* is set to true, module will try to assign portal role with such name to the authenticated user. If such role doesn't exist in portal, module will try to create it.

For obvious reasons this is designed to use with portal identity modules configured with DB and not LDAP

## 15.2.4. org.jboss.portal.identity.auth.SynchronizingLdapExtLoginModule

All options that apply for *SynchronizingLdapLoginModule* also apply here. It's the same kind of wrapper made around LdapExtLoginModule [5] from JBossSX. Sample configuration can look like this:

```
 <login-module code="org.jboss.portal.identity.auth.SynchronizingLDAPExtLoginModule"
               flag="required">
   <module-option name="synchronizeIdentity">true</module-option>
   <module-option name="synchronizeRoles">true</module-option>
   <module-option name="additionalRole">Authenticated</module-option>
   <module-option name="defaultAssignedRole">User</module-option>
   <module-option name="userModuleJNDIName">java:/portal/UserModule</module-option>
   <module-option name="roleModuleJNDIName">java:/portal/RoleModule</module-option>
   <module-option name="membershipModuleJNDIName">java:/portal/MembershipModule
   </module-option>
   <module-option name="userProfileModuleJNDIName">java:/portal/UserProfileModule
   </module-option>
   <module-option name="java.naming.factory.initial">com.sun.jndi.ldap.LdapCtxFactory
   </module-option>
   <module-option name="java.naming.provider.url">ldap://example.com:10389/
   </module-option>
   <module-option name="java.naming.security.authentication">simple</module-option>
   <module-option name="bindDN">cn=Directory Manager</module-option>
   <module-option name="bindCredential">secret</module-option>
   <module-option name="baseCtxDN">ou=People,dc=example,dc=com</module-option>
   <module-option name="baseFilter">(uid={0})</module-option>
   <module-option name="rolesCtxDN">ou=Roles,dc=example,dc=com</module-option>
   <module-option name="roleFilter">(member={1})</module-option>
   <module-option name="roleAttributeID">cn</module-option>
   <module-option name="roleRecursion">-1</module-option>
   <module-option name="searchTimeLimit">10000</module-option>
   <module-option name="searchScope">SUBTREE_SCOPE</module-option>
   <module-option name="allowEmptyPasswords">false</module-option>
</login-module>
```

## 15.2.5. org.jboss.portal.identity.auth.SynchronizingLoginModule

This module is designed to provide synchronization support for any other LoginModule placed in the authentication stack. It leverages the fact that in JAAS authentication process occurs in two phases. In first phase when login() method is invoked it always returns "true". Because of this behaviour *SynchronizingLoginModule* should be always used with "optional" flag. More over it should be placed after the module we want to leverage as a source for synchronization and that module should have "required" flag set. During the second phase when commit() method is invoked it gets user *Subject* and its *Principal*s and tries to synchronize them into storage configured for portal identity modules. For this purposes such options are supported:

- **userModuleJNDIName** - JNDI name of portal UserModule. This option is *obligatory* if *synchronizeIdentity*

[5] http://wiki.jboss.org/wiki/Wiki.jsp?page=LdapExtLoginModule

option is set to *true*

- **roleModuleJNDIName** - JNDI name of portal RoleModule. This option is *obligatory* if *synchronizeIdentity* and *synchronizeRoles* options are set to *true*
- **membershipModuleJNDIName** - JNDI name of portal MembershipModule. This option is *obligatory* if *synchronizeIdentity* and *synchronizeRoles* options are set to *true*
- **userProfileModuleJNDIName** - JNDI name of portal UserProfileModule. This option is *obligatory* if *synchronizeIdentity* option is set to *true*
- **synchronizeIdentity** - if set to *true* module will check if successfully authenticated user exist in portal and if not it will try to create it. If user exists module will update its password to the one that was just validated.
- **synchronizeRoles** - if set to *true* module will iterate over all roles assigned to authenticated user and for each it will try to check if such role exists in portal and if not it will try to create it. This option is checked only if *synchronizeIdentity* is set to true;
- **additionalRole** - module will add this role name to the group of principals assigned to the authenticated user.
- **defaultAssignedRole** - if *synchronizeIdentity* is set to true, module will try to assign portal role with such name to the authenticated user. If such role doesn't exist in portal, module will try to create it.

### Note

Example of usage in LDAP authentication can be found in next chapter.

# 16

# LDAP

**Boleslaw Dawidowicz** `<boleslaw dot dawidowicz at redhat dot com>`

This chapter describes how to setup LDAP support in JBoss Portal

> **Note**
> To be able to fully understand this chapter you should also read JBoss Portal Identity management and Authentication chapters before

## 16.1. How to enable LDAP usage in JBoss Portal

We'll describe here the simple steps that you will need to perform to enable LDAP support in JBoss Portal. For additional information you need to read more about configuration of identity and specific implementations of identity modules

There are two ways to achieve this:

- **jboss-porta.sar/META-INF/jboss-service.xml** in section:

```
<mbean
   code="org.jboss.portal.identity.IdentityServiceControllerImpl"
   name="portal:service=Module,type=IdentityServiceController"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <depends>portal:service=Hibernate</depends>
   <attribute name="JndiName">java:/portal/IdentityServiceController</attribute>
   <attribute name="RegisterMBeans">true</attribute>
   <attribute name="ConfigFile">conf/identity/identity-config.xml</attribute>
   <attribute name="DefaultConfigFile">conf/identity/standardidentity-config.xml</attribute>
</mbean>
```

  change **identity-config.xml** to **ldap_identity-config.xml**

- Swap the names or content of files in **jboss-porta.sar/conf/identity/identity-config.xml** and **jboss-porta.sar/conf/identity/ldap_identity-config.xml**

After doing one of the above changes you need to edit configuration file that you choose to use (identity-config.xml or ldap_identity-config.xml) and configure LDAP connection options in section:

```
<datasource>
   <name>LDAP</name>
```

```
   <config>
      <option>
         <name>host</name>
         <value>jboss.com</value>
      </option>
      <option>
         <name>port</name>
         <value>10389</value>
      </option>
      <option>
         <name>adminDN</name>
         <value>cn=Directory Manager</value>
      </option>
      <option>
         <name>adminPassword</name>
         <value>qpq123qpq</value>
      </option>
   </config>
</datasource>
```

You also need to specify options for your LDAP tree (described in configuration documentation) like those:

```
<option-group>
   <group-name>common</group-name>
   <option>
      <name>userCtxDN</name>
      <value>ou=People,dc=portal26,dc=jboss,dc=com</value>
   </option>
   <option>
      <name>roleCtxDN</name>
      <value>ou=Roles,dc=portal26,dc=jboss,dc=com</value>
   </option>
</option-group>
```

**Note**

Under **PORTAL_SOURCES/identity/src/resources/example/** you can find a sample ldif that you can use to populate LDAP server and quickly start playing with it.

# 16.2. Configuration of LDAP connection

## 16.2.1. SSL

The setup is very similar to the one described in LdapLoginModule wiki page [1]

You need to modify your identity configuration file and add "protocol"

```
<datasource>
   <name>LDAP</name>
   <config>
      ...
      <option>
         <name>protocol</name>
         <value>ssl</value>
      </option>
```

[1] http://www.jboss.org/wiki/Wiki.jsp?page=LdapLoginModule

```
      ...
   </config>
</datasource>
```

Then you need to have LDAP server certificate imported into your keystore. You can use following command:

```
keytool -import -file ldapcert.der -keystore ldap.truststore
```

Now you need to change the settings to use the alternative truststore. That can be done in the properties-service.xml in deploy directory:

```
<attribute name="Properties">
   javax.net.ssl.trustStore=../some/path/to/ldap.truststore
   javax.net.ssl.trustStorePassword=somepw
</attribute>
```

### 16.2.2. ExternalContext

Instead of configuring your own connection you can use JNDI context federation mechanism in JBoss Application Server. Configuration of ExternalContext is described in JBoss Application Server documentation [2]

When you have ExternalContext configured you can use it in JBoss Portal by providing proper JNDI name in the configuration:

```
<datasource>
   <name>LDAP</name>
   <config>
      <option>
         <name>externalContextJndiName</name>
         <value>external/ldap/jboss</value>
      </option>
   </config>
</datasource>
```

**Note**

When using "externalContextJndiName" you don't need to specify any other option for this datasource

## 16.3. LDAP Identity Modules

JBoss Portal comes with base LDAP implementation of all identity modules.

### 16.3.1. Common settings

For all modules you can set two config options:

- **jNDIName** - JNDI name under which this module will be registered

[2] http://docs.jboss.com/jbossas/guides/j2eeguide/r2/en/html_single/#d0e6877

- **connectionJNDIName** - JNDI name under which LDAP datasource is registered

### Note

Most configuration of LDAP identity modules is done in *options* section by adding module specific options in *"common"* option-group or in other module specific groups.

## 16.3.2. UserModule

**Table 16.1. Comparision of UserModule implementations**

| Features | UserModule | |
|---|---|---|
| | **LDAPUserModuleImpl** | **LDAPExtUserModuleImpl** |
| User creation | X | - |
| User removal | X | - |
| User search | Flat - one level scope | Flexible filter - sub tree scope |

### 16.3.2.1. LDAPUserModuleImpl

This is the base implementation of LDAP *UserModule*. It supports user creation, but will retrieve users and create them in strictly specified place in LDAP tree.

To enable it in your configuration you should have:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>User</type>
   <implementation>LDAP</implementation>
   <config/>
</module>
```

org.jboss.portal.identity.ldap.LDAPUserModuleImpl configuration option-groups options:

- **common**:
  - **userCtxDN** - DN that will be used as context for user searches
  - **uidAttributeID** - attribute name under which user name is specified. Default value is "uid"
  - **passwordAttributeID** - attribute name under which user password is specified. Default value is "userPassword"
  - **principalDNPrefix** and **principalDNSuffix**
  - **searchTimeLimit** - The timeout in milliseconds for the user searches. Defaults to 10000 (10 seconds).

- **userCreateAttibutes**: This option-group defines a set of ldap attributes that will be set on user entry creation. Option name will be used as attribute name, and option values as attribute values. This enables to fulfill LDAP schema requirements.

Example configuration:

```
<option-group>
   <group-name>common</group-name>
   <option>
      <name>userCtxDN</name>
      <value>ou=People,o=portal,dc=my-domain,dc=com</value>
   </option>
   <option>
      <name>uidAttributeID</name>
      <value>uid</value>
   </option>
   <option>
      <name>passwordAttributeID</name>
      <value>userPassword</value>
   </option>
</option-group>
<option-group>
   <group-name>userCreateAttibutes</group-name>
   <option>
      <name>objectClass</name>
      <!--This objectclasses should work with Red Hat Directory-->
      <value>top</value>
      <value>person</value>
      <value>inetOrgPerson</value>
   </option>
   <!--Schema requires those to have initial value-->
   <option>
      <name>cn</name>
      <value>none</value>
   </option>
   <option>
      <name>sn</name>
      <value>none</value>
   </option>
</option-group>
```

#### 16.3.2.2. LDAPExtUserModuleImpl

Aim of this implementation is to give more flexibility for users retrieval. You can specify LDAP filter that will be used for searches. This module doesn't support user creation and removal

To enable it in your configuration you should have:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>User</type>
   <implementation>LDAP</implementation>
   <class>org.jboss.portal.identity.ldap.LDAPExtUserModuleImpl</class>
   <config/>
</module
```

org.jboss.portal.identity.ldap.LDAPExtUserModuleImpl configuration option-groups options:

- **common**:

  - **userCtxDN** - DN that will be used as context for user searches. More than one value can be specified.
  - **userSearchFilter** - ldap filter to search users with. {0} will be substitute with user name. Example filter can look like this: "(uid={0})". This substituion behavior comes from the standard *DirContext.search(Name, String, Object, SearchControls cons)* method
  - **uidAttributeID** - attribute name under which user name is specified. Default value is "uid"
  - **searchTimeLimit** - The timeout in milliseconds for the user searches. Defaults to 10000 (10 seconds).

## 16.3.3. RoleModule

**Table 16.2. Comparision of RoleModule implementations**

| Features | RoleModule | |
|---|---|---|
| | **LDAPRoleModuleImpl** | **LDAPExtRoleModuleImpl** |
| Role creation | X | - |
| Role removal | X | - |
| Role search | Flat - one level scope | Flexible filter - sub tree scope |

### 16.3.3.1. LDAPRoleModuleImpl

This is the base implementation of LDAP *RoleModule*. It supports user creation, but will retrieve roles and create them in strictly specified place in LDAP tree.

To enable it in your configuration you should have:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>Role</type>
   <implementation>LDAP</implementation>
   <config/>
</module>
```

org.jboss.portal.identity.ldap.LDAPRoleModuleImpl configuration option-groups options:

- **common**:

  - **roleCtxDN** - DN that will be used as context for role searches.
  - **ridAttributeID** - attribute name under which role name is specified. Default value is "cn".

- **roleDisplayNameAttributeID** - attribute name under which role display name is specified. Default value is "cn".
- **searchTimeLimit** - The timeout in milliseconds for the roles searches. Defaults to 10000 (10 seconds).

#### 16.3.3.2. LDAPExtRoleModuleImpl

Aim of this implementation is to give more flexibility for roless retrieval. You can specify LDAP filter that will be used for searches. This module doesn't support role creation and removal

This module doesn't support role creation and removal

To enable it in your configuration you should have:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>Role</type>
   <implementation>LDAP</implementation>
   <class>org.jboss.portal.identity.ldap.LDAPExtRoleModuleImpl</class>
   <config/>
</module>
```

org.jboss.portal.identity.ldap.LDAPExtRoleModuleImpl configuration option-groups options:

- **common**:
  - **roleCtxDN** - DN that will be used as context for role searches. More than one value can be specified.
  - **roleSearchFilter** - ldap filter to search roles with. {0} will be substitute with role name. Example filter can look like this: "(cn={0})". This substituion behavior comes from the standard *DirContext.search(Name, String, Object, SearchControls cons)* method.
  - **ridAttributeID** - attribute name under which role name is specified. Default value is "cn".
  - **roleDisplayNameAttributeID** - attribute name under which role display name is specified. Default value is "cn".
  - **searchTimeLimit** - The timeout in milliseconds for the roles searches. Defaults to 10000 (10 seconds).
  - **searchScope** - Sets the search scope to one of the strings. The default is SUBTREE_SCOPE.
    - **OBJECT_SCOPE** - only search the named roles context.
    - **ONELEVEL_SCOPE** - search directly under the named roles context.
    - **SUBTREE_SCOPE** - If the roles context is not a *DirContext*, search only the object. If the roles context is a *DirContext*, search the subtree rooted at the named object, including the named object itself.

### Note

In *UserModule* there are two methods that handle offset/limit (pagination) behaviour.

```
/** Get a range of users.*/
Set findUsers(int offset, int limit) throws IdentityException, IllegalArgumentException;

/** Get a range of users.*/
Set findUsersFilteredByUserName(String filter, int offset, int limit)
   throws IdentityException, IllegalArgumentException;
```

Pagination support is not widely implemented in LDAP servers. Because *UserModule* implementations rely on JNDI and are targetted to be LDAP server agnostic those methods aren't very effecient. As long as you don't rely on portal user management and use dedicated tools for user provisioning it shouldn't bother you. Otherwise you should consider extending the implementation and providing solution dedicated to your LDAP server.

## 16.3.4. MembershipModule

**Table 16.3. Comparision of MembershipModule implementations**

| Features | MembershipModule | |
|---|---|---|
| | **LDAPStaticGroupMembership-ModuleImpl** | **LDAPStaticRoleMembership-ModuleImpl** |
| Role assignment stored in LDAP role entry | X | - |
| Role assignment stored in LDAP user entry | - | X |
| User/Role relationship creation | X | X |

### 16.3.4.1. LDAPStaticGroupMembershipModuleImpl

This module support tree shape where role entries keep information about users that are their members.

To enable it in your configuration you should have:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>Membership</type>
   <implementation>LDAP</implementation>
   <config/>
</module>
```

org.jboss.portal.identity.ldap.LDAPStaticGroupMembershipModuleImpl configuration option-groups options:

- **common**:

  - **membershipAttributeID** - LDAP attribute that defines member users ids. This will be used to retrieved users from role entry.
  - **membershipAttributeIsDN** - defines if values of attribute defined in *membershipAttributeID* are fully qualified LDAP DNs.

#### 16.3.4.2. LDAPStaticRoleMembershipModuleImpl

This module support tree shape where user entries keep information about roles that they belong to.

To enable it in your configuration you should have:

```
<module>
   <!--type used to correctly map in IdentityContext registry-->
   <type>Membership</type>
   <implementation>LDAP</implementation>
   <class>org.jboss.portal.identity.ldap.LDAPStaticRoleMembershipModuleImpl</class>
   <config/>
</module>
```

org.jboss.portal.identity.ldap.LDAPStaticRoleMembershipModuleImpl configuration option-groups options:

- **common**:

  - **membershipAttributeID** - LDAP attribute that defines role ids that user belongs to. This will be used to retrieved roles from user entry.
  - **membershipAttributeIsDN** - defines if values of attribute defined in *membershipAttributeID* are fully qualified LDAP DNs.

### 16.3.5. UserProfileModule

#### 16.3.5.1. LDAPUserProfileModuleImpl

This is standard implementation that enables to retrieve user properties from atributes in LDAP entries.

To enable it in your configuration you should have:

```
<module>
   <type>UserProfile</type>
   <implementation>DELEGATING</implementation>
   <config>
      <option>
         <name>ldapModuleJNDIName</name>
         <value>java:/portal/LDAPUserProfileModule</value>
      </option>
   </config>
</module>
```

```
<module>
   <type>DBDelegateUserProfile</type>
   <implementation>DB</implementation>
   <config>
      <option>
         <name>randomSynchronizePassword</name>
         <value>true</value>
      </option>
   </config>
</module>
<module>
   <type>LDAPDelegateUserProfile</type>
   <implementation>LDAP</implementation>
   <config/>
</module>
```

**Note**

Using such configuration you will have LDAP MembershipModule along with DB MembershipModule and Delegating MembershipModule. Please read Identity chapter to see why this is important.

org.jboss.portal.identity.ldap.LDAPUserModuleImpl configuration option-groups options:

- **common**:
  - **profileConfigFile** - file with user profile configuration. If this option is not set, and we use delegating UserProfileModule, profile configuration will be obtained from it.

## 16.4. LDAP server tree shapes

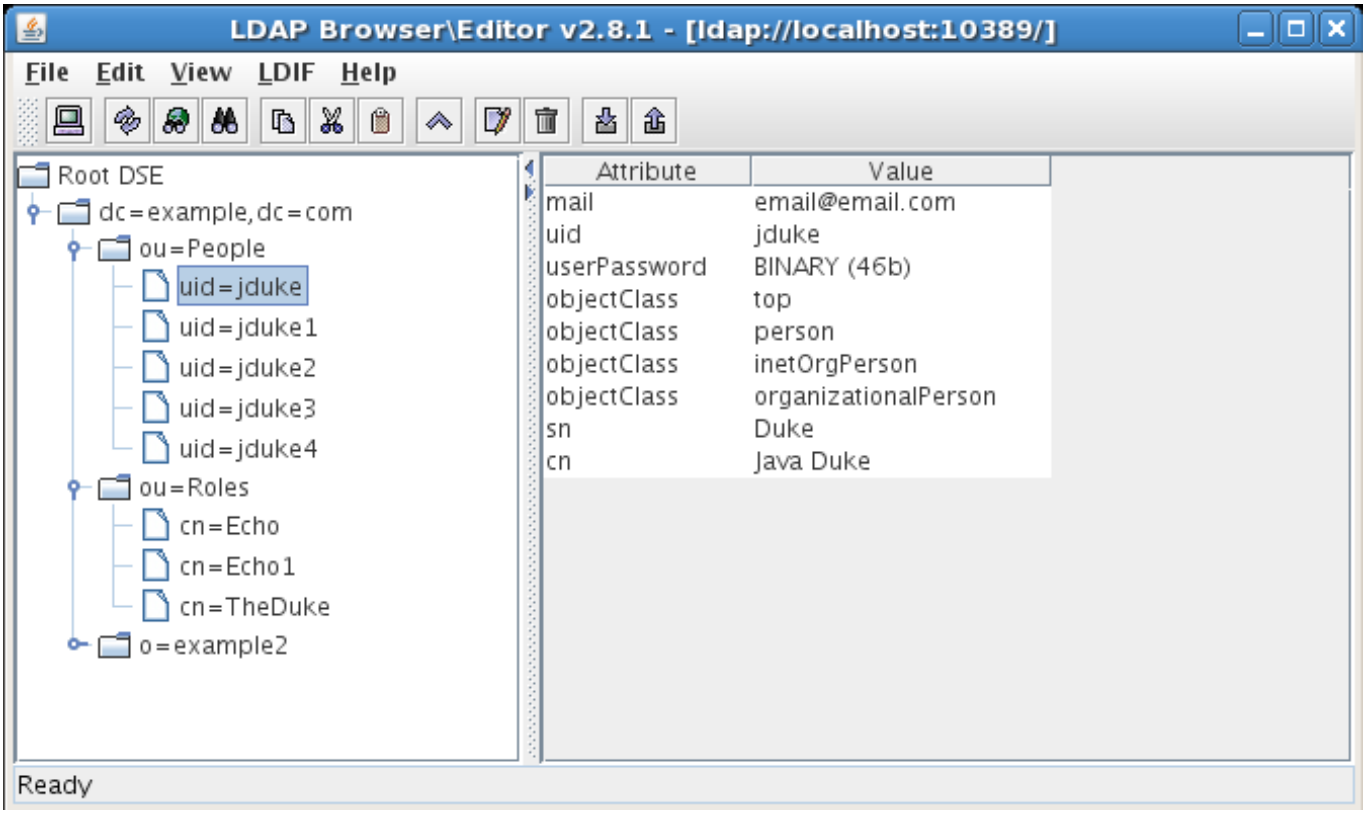
JBoss Portal supports full user/role management for simple LDAP tree shapes. Some more flexible trees can be supported by *LdapExtUserModuleImpl* and *LdapExtRoleModuleImpl* - but without user/role creation and removal capabilities. However if you have complex LDAP tree you should consider using SynchronizingLoginModule described in Authentication chapter along with dedicated tools for user provisioning provided with LDAP server.

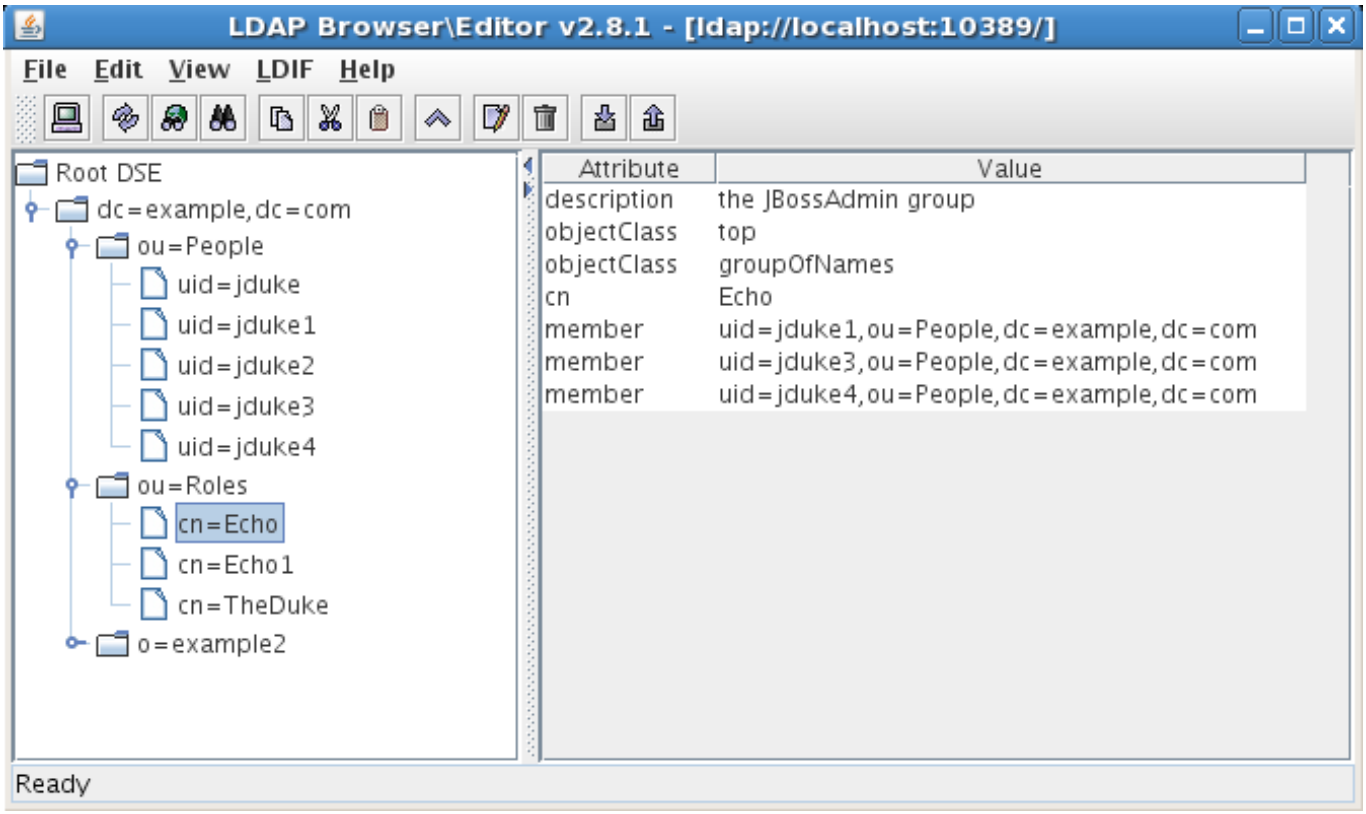
In following subsections we will describe two base LDAP tree shapes along with example LDIFs and portal identity modules configurations. Those two examples differ only by using different *MembershipModule* implementations and describe only tree shapes with supported user/role creation and removal capabilities.

### 16.4.1. Keeping users membership in role entries

In this example, information about users/roles assignment is stored in roles entries using LDAP "*member*". Of course any other attribute that comes with schema can be used for this.

Example tree shape in LDAP browser




#### 16.4.1.1. Example LDIF

```
dn: dc=example,dc=com
```

```
objectclass: top
objectclass: dcObject
objectclass: organization
dc: example
o: example

dn: ou=People,dc=example,dc=com
objectclass: top
objectclass: organizationalUnit
ou: People

dn: uid=user,ou=People,dc=example,dc=com
objectclass: top
objectclass: inetOrgPerson
objectclass: person
uid: user
cn: JBoss Portal user
sn: user
userPassword: user
mail: email@email.com

dn: uid=admin,ou=People,dc=example,dc=com
objectclass: top
objectclass: inetOrgPerson
objectclass: person
uid: admin
cn: JBoss Portal admin
sn: admin
userPassword: admin
mail: email@email.com

dn: ou=Roles,dc=example,dc=com
objectclass: top
objectclass: organizationalUnit
ou: Roles

dn: cn=User,ou=Roles,dc=example,dc=com
objectClass: top
objectClass: groupOfNames
cn: User
description: the JBoss Portal user group
member: uid=user,ou=People,dc=example,dc=com

dn: cn=Admin,ou=Roles,dc=example,dc=com
objectClass: top
objectClass: groupOfNames
cn: Echo
description: the JBoss Portal admin group
member: uid=admin,ou=People,dc=example,dc=com
```

#### 16.4.1.2. Example identity configuration

```
<modules>
  <module>
     <!--type used to correctly map in IdentityContext registry-->
     <type>User</type>
     <implementation>LDAP</implementation>
     <config/>
  </module>
  <module>
     <type>Role</type>
     <implementation>LDAP</implementation>
```

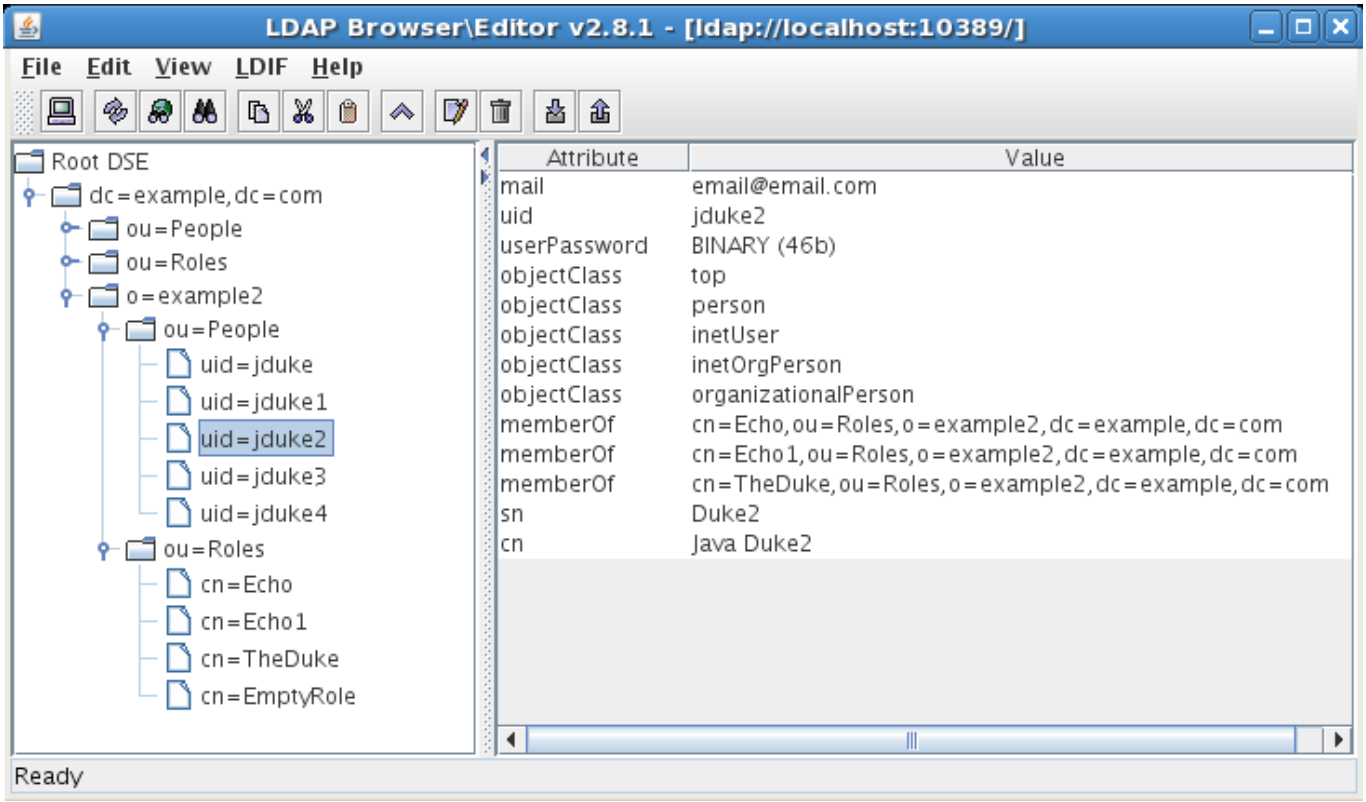
```
      <config/>
   </module>
   <module>
      <type>Membership</type>
      <implementation>LDAP</implementation>
      <config/>
   </module>
   <module>
      <type>UserProfile</type>
      <implementation>DELEGATING</implementation>
      <config>
         <option>
            <name>ldapModuleJNDIName</name>
            <value>java:/portal/LDAPUserProfileModule</value>
         </option>
      </config>
   </module>
   <module>
      <type>DBDelegateUserProfile</type>
      <implementation>DB</implementation>
      <config>
         <option>
            <name>randomSynchronizePassword</name>
            <value>true</value>
         </option>
      </config>
   </module>
   <module>
      <type>LDAPDelegateUserProfile</type>
      <implementation>LDAP</implementation>
      <config/>
   </module>
</modules>

<options>
   <option-group>
      <group-name>common</group-name>
      <option>
         <name>userCtxDN</name>
         <value>ou=People,dc=example,dc=com</value>
      </option>
      <option>
         <name>roleCtxDN</name>
         <value>ou=Roles,dc=example,dc=com</value>
      </option>
   </option-group>
   <option-group>
      <group-name>userCreateAttibutes</group-name>
      <option>
         <name>objectClass</name>
         <!--This objectclasses should work with Red Hat Directory-->
         <value>top</value>
         <value>person</value>
         <value>inetOrgPerson</value>
      </option>
      <!--Schema requires those to have initial value-->
      <option>
         <name>cn</name>
         <value>none</value>
      </option>
      <option>
         <name>sn</name>
         <value>none</value>
      </option>
   </option-group>
   <option-group>
```

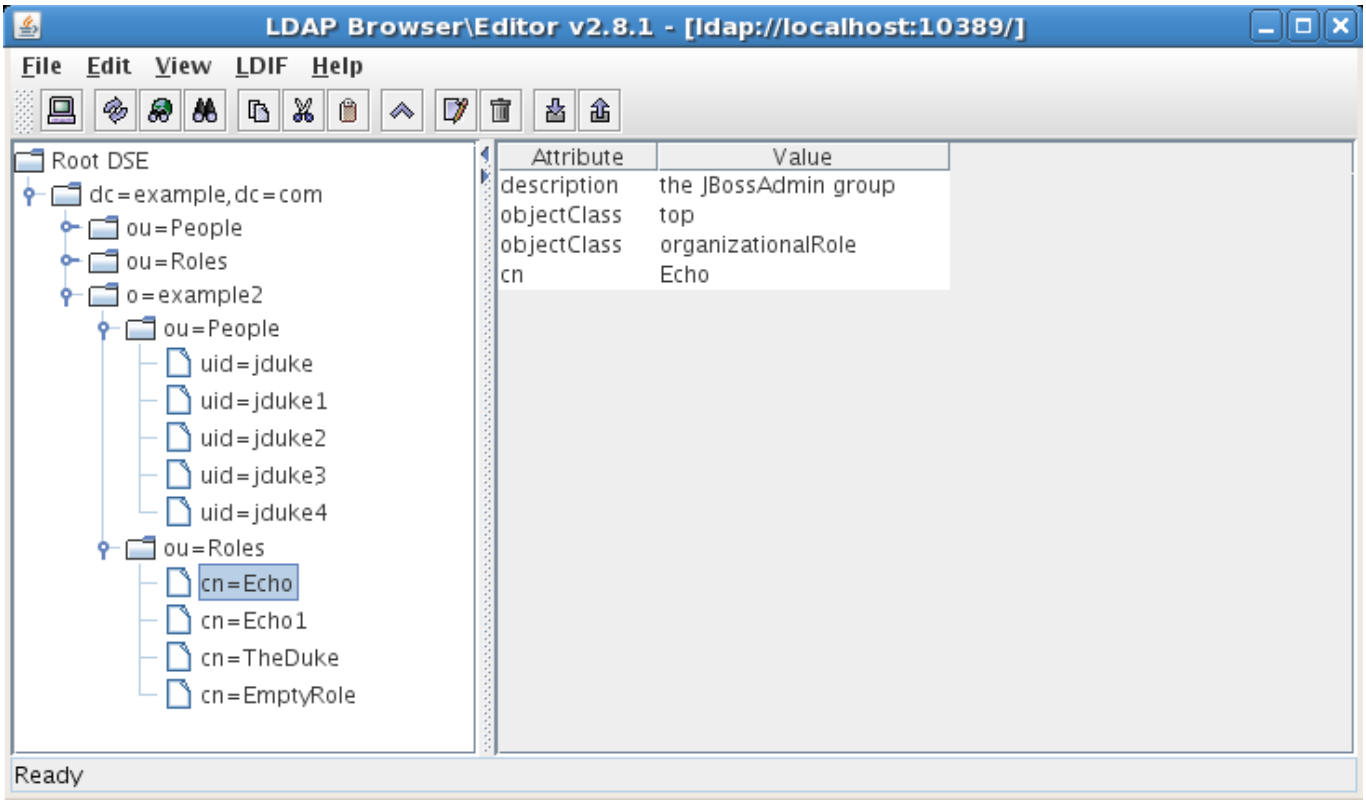
```
      <group-name>roleCreateAttibutes</group-name>
      <!--Schema requires those to have initial value-->
      <option>
         <name>cn</name>
         <value>none</value>
      </option>
      <!--Some directory servers require this attribute to be valid DN-->
      <!--For safety reasons point to the admin user here-->
      <option>
         <name>member</name>
         <value>uid=admin,ou=People,dc=example,dc=com</value>
      </option>
   </option-group>
</options>
```

## 16.4.2. Keeping users membership in user entries

In this example, information about users/roles assignment is stored in user entries using LDAP "*memberOf*". Of course any other attribute that comes with schema can be used for this.

Example tree shape in LDAP browser






### 16.4.2.1. Example LDIF

```
dn: dc=example,dc=com
objectclass: top
objectclass: dcObject
objectclass: organization
dc: example
o: example

dn: o=example2,dc=example,dc=com
objectclass: top
objectclass: organization
o: example2

dn: ou=People,o=example2,dc=example,dc=com
objectclass: top
objectclass: organizationalUnit
ou: People

dn: uid=admin,ou=People,o=example2,dc=example,dc=com
objectclass: top
objectclass: inetOrgPerson
objectclass: inetUser
uid: admin
cn: JBoss Portal admin
sn: admin
userPassword: admin
mail: email@email.com
memberOf: cn=Admin,ou=Roles,o=example2,dc=example,dc=com

dn: uid=user,ou=People,o=example2,dc=example,dc=com
objectclass: top
objectclass: inetOrgPerson
objectclass: inetUser
```

```
uid: user
cn: JBoss Portal user
sn: user
userPassword: user
mail: email@email.com
memberOf: cn=User,ou=Roles,o=example2,dc=example,dc=com

dn: ou=Roles,o=example2,dc=example,dc=com
objectclass: top
objectclass: organizationalUnit
ou: Roles

dn: cn=User,ou=Roles,o=example2,dc=example,dc=com
objectClass: top
objectClass: organizationalRole
cn: User
description: the JBoss Portal user group

dn: cn=Admin,ou=Roles,o=example2,dc=example,dc=com
objectClass: top
objectClass: organizationalRole
cn: Echo
description: the JBoss Portal admin group
```

#### 16.4.2.2. Example identity configuration

```
<modules>
  <module>
     <!--type used to correctly map in IdentityContext registry-->
     <type>User</type>
     <implementation>LDAP</implementation>
     <config/>
  </module>
  <module>
     <type>Role</type>
     <implementation>LDAP</implementation>
     <config/>
  </module>
  <module>
     <type>Membership</type>
     <implementation>LDAP</implementation>
     <class>org.jboss.portal.identity.ldap.LDAPStaticRoleMembershipModuleImpl</class>
     <config/>
  </module>
  <module>
     <type>UserProfile</type>
     <implementation>DELEGATING</implementation>
     <config>
        <option>
           <name>ldapModuleJNDIName</name>
           <value>java:/portal/LDAPUserProfileModule</value>
        </option>
     </config>
  </module>
  <module>
     <type>DBDelegateUserProfile</type>
     <implementation>DB</implementation>
     <config>
        <option>
           <name>randomSynchronizePassword</name>
           <value>true</value>
        </option>
```

```
      </config>
   </module>
   <module>
      <type>LDAPDelegateUserProfile</type>
      <implementation>LDAP</implementation>
      <config/>
   </module>
</modules>

<options>
   <option-group>
      <group-name>common</group-name>
      <option>
         <name>userCtxDN</name>
         <value>ou=People,dc=example,dc=com</value>
      </option>
      <option>
         <name>roleCtxDN</name>
         <value>ou=Roles,dc=example,dc=com</value>
      </option>
      <option>
         <name>membershipAttributeID</name>
         <value>memberOf</value>
      </option>
   </option-group>
   <option-group>
      <group-name>userCreateAttibutes</group-name>
      <option>
         <name>objectClass</name>
         <!--This objectclasses should work with Red Hat Directory-->
         <value>top</value>
         <value>person</value>
         <value>inetOrgPerson</value>
      </option>
      <!--Schema requires those to have initial value-->
      <option>
         <name>cn</name>
         <value>none</value>
      </option>
      <option>
         <name>sn</name>
         <value>none</value>
      </option>
   </option-group>
   <option-group>
      <group-name>roleCreateAttibutes</group-name>
      <!--Schema requires those to have initial value-->
      <option>
         <name>cn</name>
         <value>none</value>
      </option>
      <!--Some directory servers require this attribute to be valid DN-->
      <!--For safety reasons point to the admin user here-->
      <option>
         <name>member</name>
         <value>uid=admin,ou=People,dc=example,dc=com</value>
      </option>
   </option-group>
</options>
```

## 16.5. Synchronizing LDAP configuration

Like it was described in previous section, you can meet some limitations in identity modules support for more complex LDAP tree shapes. To workaround this you can use identity synchronization on JAAS level. JBoss Portal comes with SynchronizingLoginModule that can be easily configured with other authentication solutions that support JAAS framework. Here we want to provide a simple example on how it can be integrated with *LdapExtLoginModule [3] from* JBossSX *framework.*

First of all portal identity modules should be configured to work with portal database - default configuration. This is important as we will leverage them, and we want to synchronize users identity into default portal storage mechanism. So lets look at simple configuration that should take place in *jboss-portal.sar/conf/login-config.xml*

```
<policy>
   <!-- For the JCR CMS -->
   <application-policy name="cms">
      <authentication>
         <login-module code="org.apache.jackrabbit.core.security.SimpleLoginModule"
                       flag="required"/>
      </authentication>
   </application-policy>

   <application-policy name="portal">
      <authentication>

         <login-module code="org.jboss.security.auth.spi.LdapExtLoginModule" flag="required">
            <module-option name="java.naming.factory.initial">com.sun.jndi.ldap.LdapCtxFactory
            </module-option>
            <module-option name="java.naming.provider.url">ldap://example.com:10389/
            </module-option>
            <module-option name="java.naming.security.authentication">simple</module-option>
            <module-option name="bindDN">cn=Directory Manager</module-option>
            <module-option name="bindCredential">lolo</module-option>
            <module-option name="baseCtxDN">ou=People,dc=example,dc=com</module-option>
            <module-option name="baseFilter">(uid={0})</module-option>
            <module-option name="rolesCtxDN">ou=Roles,dc=example,dc=com</module-option>
            <module-option name="roleFilter">(member={1})</module-option>
            <module-option name="roleAttributeID">cn</module-option>
            <module-option name="roleRecursion">-1</module-option>
            <module-option name="searchTimeLimit">10000</module-option>
            <module-option name="searchScope">SUBTREE_SCOPE</module-option>
            <module-option name="allowEmptyPasswords">false</module-option>
         </login-module>

         <login-module code="org.jboss.portal.identity.auth.SynchronizingLoginModule"
                       flag="optional">
            <module-option name="synchronizeIdentity">true</module-option>
            <module-option name="synchronizeRoles">true</module-option>
            <module-option name="additionalRole">Authenticated</module-option>
            <module-option name="defaultAssignedRole">User</module-option>
            <module-option name="userModuleJNDIName">java:/portal/UserModule</module-option>
            <module-option name="roleModuleJNDIName">java:/portal/RoleModule</module-option>
            <module-option name="membershipModuleJNDIName">java:/portal/MembershipModule
            </module-option>
            <module-option name="userProfileModuleJNDIName">java:/portal/UserProfileModule
            </module-option>
         </login-module>

      </authentication>
   </application-policy>
</policy>
```

Few things are important in this configuration:

*[3] http://wiki.jboss.org/wiki/Wiki.jsp?page=LdapExtLoginModule*

- *LdapExtLoginModule* has *flag="required"* set which means that if this single *LoginModule* return *fail* from authentication request whole process will fail. *SynchronizingLoginModule* has *flag="optional"*. Such combination is critical as *SynchronizingLoginModule* always authenticates user sucessfully no matter what credentials were provided. You always must have at least one *LoginModule* that you will rely on.
- *SynchronizingLoginModule* is always the *last* one in whole authentication chain. This is because in *commit* phase it will take users *Subject* and its *Principals* (roles) assigned by previous *LoginModule*s and try to synchronize them. Roles assigned to authenticated user by *LoginModule*s after it won't be handled.

## 16.6. Supported LDAP servers

LDAP servers support depends on few conditions. In most cases they differ in schema support - various objectClass objects are not present by default in server schema. Sometimes it can be workarounded by manually extending schema.

Servers can be

- *Supported*
- *Not Supported*
- *Experimental* - implementation can work with such server but it's not well tested so shouldn't be considered for production.

**Table 16.4. Support of identity modules with different LDAP servers**

| **LDAP Server** | **UserModule** | | **RoleModule** | | **MembershipModule** | | **UserProfileModule** |
|---|---|---|---|---|---|---|---|
| | **LDAPUserModuleImpl** | **LDAPExtUserModuleImpl** | **LDAPRoleModuleImpl** | **LDAPExtRoleModuleImpl** | **LDAPStaticGroupMembershipModuleImpl** | **LDAPStaticRoleMembershipModuleImpl** | **LDAPUserProfileModuleImpl** |
| Red Hat Directory Server | *Supported* | *Supported* | *Supported* | *Supported* | *Supported* | *Supported* | *Supported* |
| OpenDS | *Supported* | *Supported* | *Supported* | *Supported* | *Supported* | *Not Supported* | *Supported* |
| OpenLDAP | *Supported* | *Supported* | *Supported* | *Supported* | *Supported* | *Not Supported* | *Supported* |

# 17

# Single Sign ON

**Boleslaw Dawidowicz** `<boleslaw dot dawidowicz at redhat dot com>`

This chapter describes how to setup SSO in JBoss Portal

## 17.1. Overview of SSO in portal

Portal as an integration and aggregation platform provides some form of SSO by itself. When you log into the portal you gain access to many systems through portlets using a single identity. Still in many cases you need to integrate the portal infrastructure with other SSO enabled systems. There are many different Identity Management solutions on the market. In most cases each SSO framework provides its own way to plug into Java EE application. For custom configurations you need to have a good understanding of JBoss Portal Identity management and authentication mechanisms.

## 17.2. Using Tomcat Valve

JBoss Application Server embeds Apache Tomcat as the default servlet container. Tomcat provides a builtin SSO support using a valve. The Single Sign On Valve caches credentials on the server side, and then invisibly authenticate users when they reach different web applications. Credentials are stored in a host-wide session which means that SSO will be effective throughout the session.

> **Note**
> Below we will describe configuration using *JBoss Application Server 4.0.5*. For different versions it can be slightly different.

### 17.2.1. Enabling Tomcat SSO Valve

To enable SSO valve in Tomcat you should edit *$JBOSS_HOME/server/default/deploy/jbossweb-tomcat55.sar/server.xml* file and uncomment following line:

```
<Valve className='org.apache.catalina.authenticator.SingleSignOn'/>
```

### 17.2.2. Example of usage

Lets look a little bit closer and configure SSO between portal and other web application. As an example we'll use

*jmx-console* web-app that comes with every JBoss Application Server installation. You can find more information on how to secure *jmx-console* in JBoss AS wiki [1].

1. Take a clean install of *JBoss Application Server 4.0.5.GA*

2. Edit *$JBOSS_HOME/server/default/deploy/jmx-console.war/WEB-INF/web.xml* file and make sure it contains following content:

```
<security-constraint>
  <web-resource-collection>
    <web-resource-name>HtmlAdaptor</web-resource-name>
    <description>An example security config that only allows users with the
      role JBossAdmin to access the HTML JMX console web application
    </description>
    <url-pattern>/*</url-pattern>
    <http-method>GET</http-method>
    <http-method>POST</http-method>
  </web-resource-collection>
  <auth-constraint>
    <role-name>Admin</role-name>
  </auth-constraint>
</security-constraint>

<security-constraint>
  <web-resource-collection>
    <web-resource-name>Public</web-resource-name>
    <url-pattern>/public/*</url-pattern>
    <http-method>GET</http-method>
    <http-method>POST</http-method>
  </web-resource-collection>
</security-constraint>

<login-config>
  <auth-method>BASIC</auth-method>
  <realm-name>jmx-console</realm-name>
</login-config>

<security-role>
   <role-name>Admin</role-name>
</security-role>
```

   This will secure *jmx-console* web application using BASIC browser authentication and restrict access for users with *Admin* role only.

3. Edit *$JBOSS_HOME/server/default/conf/props/jmx-console-roles.properties* file and make it contain:

```
admin=JBossAdmin,HttpInvoker,Admin
```

   This file is a simple identity store for this web application authentication. It will make user *admin* belongs to *Admin* role.

4. Deploy JBoss Portal

[1] http://wiki.jboss.org/wiki/Wiki.jsp?page=SecureTheJmxConsole

5. Run JBoss Application Server
6. Now you can check that when you go to
   - *http://localhost:8080/portal*
   - *http://localhost:8080/jmx-console*

   you need to authenticate separately into each of those web applications.
7. Shutdown Application Server
8. Edit *$JBOSS_HOME/server/default/deploy/jbossweb-tomcat55.sar/server.xml* file and uncomment following line:

```
<Valve className='org.apache.catalina.authenticator.SingleSignOn'/>
```

   Run JBoss Application Server.

Now if you log into portal as user *admin* with password *admin*, you won't be asked for credentials when accessing *jmx-console*. This should work in both directions.

### Note

Please note that in this example *jmx-console* uses *BASIC* authentication method. This means that user credentials are cached on the client side by browser and passed on each request. Once authenticated to clear authentication cache you may need to restart browser.

# 18

# CMS Portlet

**Roy Russo** `<roy @ jboss dot org>`

**Thomas Heute** `<theute@jboss.org>`

JBoss Portal packages a Web Content Management System capable of serving and allowing administration of web content. This chapter describes the CMS Portlet which is responsible for serving resources requested, the following chapter describes the CMSAdmin Portlet and all administration functionality.


## 18.1. Introduction

The CMS Portlet displays content from the file store inside a portlet window, or, in the case of binary content, out-

side of the portlet window altogether.

## 18.2. Features

The CMSPortlet handles all requests for all content types.

The methodology of serving content within the CMSPortlet, allows for some beneficial features, like:

1. Search-engine friendly URLs: http://domain/[portal]/content/company.html
2. Serve binaries with simple urls independant of the portal: http://domain/content/products.pdf
3. Deploy several instances of the CMSPortlet on any page and configure them to display different start pages.
4. Localization support: CMSPortlet will display content based on the user request locale, or display content using the default locale setting.

## 18.3. CMS content

Since 2.6 displaying CMS content in the portal is done using the new content integration feature. Each window of the portal can be configured to display CMS content directly instead of having to configure the CMS portlet as it used to be.

### 18.3.1. Configuring a window to display CMS content

Showing CMS content in a portal window can be done in the deployment descriptor quite easily

```
<window>
   <window-name>MyCMSWindow</window-name>
   <content>
      <content-type>cms</content-type>
      <content-uri>/default/index.html</content-uri>
   </content>
   <region>center</region>
   <height>1</height>
</window>
```

At the first display of the window, the content is initialized with the content uri value. When the user clicks on a link that navigates to another CMS file, the CMS file will be shown in the same window.

## 18.4. CMS Configuration

### 18.4.1. Display CMS content

Since 2.6 displaying CMS content in the portal is done using the new content integration feature. The portal is also able to map urls content to the CMS through a specific window. The CMS portlet default page is defined as a preference and can be overriden like any other preference up to the user's preference level. The default CMS portlet

displayed when you install JBoss Portal for the first time is describe in the following file: *jboss-portal.sar/portal-core.war/WEB-INF/portlet.xml* .

```
<portlet-preferences>
   <preference>
      <name>indexpage</name>
      <value>/default/index.html</value>
   </preference>
</portlet-preferences>
```

The preference key is "indexpage". To change the default page, just make sure to create an html document using the CMS Admin portlet then change the value of "indexpage" to the corresponding path.

## 18.4.2. Service Configuration

### 18.4.2.1. Tuning Jackrabbit

JBoss Portal uses Apache Jackrabbit as its Java Content Repository implementation. Configuration of the service descriptor, allows for changing many of the variables associated with the service.

Here is the default configuration for the CMS repository found under `portal-cms.sar/META-INF-INF/jboss-service.xml`

```
...
<attribute name="DoChecking">true</attribute>
<attribute name="DefaultContentLocation">portal/cms/conf/default-content/default/</attribute>
<attribute name="DefaultLocale">en</attribute>
<attribute name="RepositoryName">PortalRepository</attribute>
<attribute name="HomeDir">${jboss.server.data.dir}${/}portal${/}cms${/}conf</attribute>
...
```

Below is a list of items found in the service descriptor and their definitions. Only items commonly changed are covered here and it is recommended you do not change any others unless you are very brave.

- **DoChecking:** Should the portal attempt to check for the existence of the repository configuration files and default content on startup?
- **DefaultContentLocation:** Location of the default content used to pre-populate the repository.
- **DefaultLocale:** Two-letter abbreviation of the default locale the portal should use when fetching content for users. A complete ISO-639 list can be found here [1] .
- **HomeDir:** Location of configuration information for the repository when in 100% FileSystem store mode. Otherwise, its in the database.

### 18.4.2.2. Changing the url under which the content should be accessible

By default, the content will be accessible to a url like this: http://www.example.com/content/[...], if you need or prefer to change "content" to something else you will need to edit the following file: `portal-cms.sar/META-INF-INF/jboss-service.xml` and change the value of Prefix to something else. Please note that you cannot change it to "nothing", you need to provide a value.

[1] http://ftp.ics.uci.edu/pub/ietf/http/related/iso639.txt

```
...
<mbean
   code="org.jboss.portal.core.cms.CMSObjectCommandFactory"
   name="portal:commandFactory=CMSObject"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.common.system.JBossServiceModelMBean">
   <xmbean/>
   <attribute name="Prefix">content</attribute>
   <attribute name="TargetWindowRef">default.default.CMSPortletWindow</attribute>
   <depends optional-attribute-name="Factory" proxy-type="attribute">
   portal:commandFactory=Delegating
   </depends>
   <depends optional-attribute-name="CMSService" proxy-type="attribute">
   portal:service=CMS
   </depends>
</mbean>
...
```

- **Prefix:** This is the context path prefix that will trigger the portal to render content. By default, navigating to a URL such as http://localhost:8080/[portal_context]/content/Test.PDF will trigger the portal to display the PDF isolated from the portal pages. The path following the *Prefix* has to be absolute when fetching content.

## 18.4.3. Configuring the Content Store Location

By default, the JBoss Portal CMS stores all node properties, references, and binary content in the database, using the portal datasource. The location of some of these items is configurable, and there are 3 options:

- Section 18.4.3.1
- Section 18.4.3.2
- Section 18.4.3.3

### 18.4.3.1. 100% Filesystem Storage

To enable 100% Filesystem storage, you must edit the file: *jboss-portal.sar/portal-cms.sar/META-INF/jboss-service.xml* . You will note that the file is set to use the HibernateStore and HibernatePersistenceManager classes, by default. To have the CMS use 100% file system storage, simply comment these blocks. Then, you should uncomment to use the LocalFileSystem and XMLPersistenceManager classes. Follow these steps to activate 100% FS storage:

1. Comment out the following blocks (there are 3 in total):

```
<!-- HibernateStore: uses RDBMS + Hibernate for storage -->
<FileSystem class="org.jboss.portal.cms.hibernate.HibernateStore">
...
</FileSystem>
```

   And uncomment the blocks under them (there are 3 in total):

```
```

```
<!-- LocalFileSystem: uses FileSystem for storage. -->
<FileSystem class="org.apache.jackrabbit.core.fs.local.LocalFileSystem">
...
</FileSystem>
```

2. Now comment out the following blocks (there are 2 in total):

```
<!-- HibernatePersistentManager: uses RDBMS + Hibernate for storage -->
<PersistenceManager class="org.jboss.portal.cms.hibernate.state.HibernatePersistenceManager">
...
</PersistenceManager>
```

And uncomment the blocks under them (there are 2 in total):

```
<!-- XMLPersistenceManager: uses FileSystem for storage -->
<PersistenceManager class="org.apache.jackrabbit.core.state.xml.XMLPersistenceManager"/>
```

## Warning

If you do any change at the workspaces configuration you will need to delete the file *$JBOSS_HOME/server/xxx/data/portal/cms/conf/workspaces/default/workspace.xml* before restarting JBoss or redeploying JBoss Portal. If you forget to do that, the changes won't affect the CMS. For the same reason, you also need to delete that file if you recompile JBoss Portal after changing the name of the data-source. Note that on a cluster environment, you need to remove that file (if it exists) on all the nodes.

#### 18.4.3.2. 100% Database Storage

This is the default configuration for the CMS store. Please view the original *jboss-portal.sar/portal-cms.sar/META-INF/jboss-service.xml* , for guidance on how to reset it.

#### 18.4.3.3. Mixed Storage

Mixed storage consists of meta-data being stored in the DB and blobs being stored on the Filesystem. This is the recommended setting for those of you that serve large files or stream media content.

Setting the repository this way is simple. Change every instance in the file *jboss-portal.sar/portal-cms.sar/META-INF/jboss-service.xml* , from:

```
<param name="externalBLOBs" value="false"/>
```

to:

```
<param name="externalBLOBs" value="true"/>
```

## Warning

If you do any change at the workspaces configuration you will need to delete the file *$JBOSS_HOME/server/xxx/data/portal/cms/conf/workspaces/default/workspace.xml* before restarting JBoss or redeploying JBoss Portal. If you forget to do that, the changes won't affect the CMS. For the same reason, you also need to delete that file if you recompile JBoss Portal after changing the name of the data-

source. Note that on a cluster environment, you need to remove that file (if it exists) on all the nodes.

## 18.5. Localization Support

The CMS Portlet now serves content based on the user's locale setting. For example: if a user's locale is set to Spanish in his browser, and he requests URL: *default/index.html* , the CMSPortlet will first try and retrieve the Spanish version of that file. If a Spanish version is not found, it will then try and retrieve the default language version set for the CMSPortlet.

## 18.6. CMS Service

The CMS portlet calls a CMS service that can be reused in your own portlets.

### 18.6.1. CMS Interceptors

Since JBoss Portal 2.4 you can add your own interceptor stack to the CMS service. The interceptors are called around each command (Get a file, write a file, create a folder...), this is a very easy way to customize some actions based on your needs.

To create your own interceptor you just need to extend the `org.jboss.portal.cms.CMSInterceptor` class and provide the content of the `invoke(JCRCommand)` method. Do not forget to make a call to `JCRCommand.invokeNext()` or the command will never be executed.

JBoss Portal relies on the interceptor mechanism to integrate its Fine Grained Security Service and the Publish/Approve Workflow Service

To add or remove an interceptor, you just need to edit the following file: `portal-cms-sar/META-INF/jboss-service.xml`. It works the same way as the server interceptor, for each interceptor you need to define an mbean then add it to the cms interceptor stack. For example, if you have the 2 default interceptors, you should have the following lines in the jboss-service.xml file:

```
<!-- ACL Security Interceptor -->
<mbean code="org.jboss.portal.cms.impl.interceptors.ACLInterceptor"
        name="portal:service=Interceptor,type=Cms,name=ACL" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <attribute name="JNDIName">
                java:/portal/cms/ACLInterceptor
        </attribute>
        <attribute name="CmsSessionFactory">
                java:/portal/cms/CMSSessionFactory
        </attribute>
        <attribute name="IdentitySessionFactory">
                java:/portal/IdentitySessionFactory
        </attribute>
        <attribute name="DefaultPolicy">
                <policy>
                        <!-- permissions on the root cms node -->
                        <criteria name="path" value="/">
                                <permission name="cms" action="read">
                                        <role name="Anonymous" />
                                </permission>
                                <permission name="cms" action="write">
```

```
                                        <role name="User" />
                                </permission>
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                        <!-- permissions on the default cms node -->
                        <criteria name="path" value="/default">
                                <permission name="cms" action="read">
                                        <role name="Anonymous" />
                                </permission>
                                <permission name="cms" action="write">
                                        <role name="User" />
                                </permission>
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                        <!-- permissions on the private/protected node -->
                        <criteria name="path" value="/default/private">
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                </policy>
        </attribute>
        <depends optional-attribute-name="AuthorizationManager"
                proxy-type="attribute">
                portal:service=AuthorizationManager,type=cms
        </depends>
        <depends>portal:service=Hibernate,type=CMS</depends>
        <depends>
                portal:service=Module,type=IdentityServiceController
        </depends>
</mbean>

<!-- Approval Workflow Interceptor -->
<mbean
        code="org.jboss.portal.cms.impl.interceptors.ApprovalWorkflowInterceptor"
        name="portal:service=Interceptor,type=Cms,name=ApprovalWorkflow"
        xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <attribute name="JNDIName">
                java:/portal/cms/ApprovalWorkflowInterceptor
        </attribute>
        <depends>portal:service=Hibernate,type=CMS</depends>
</mbean>

<!-- CMS Interceptor Registration -->
<mbean
        code="org.jboss.portal.server.impl.invocation.JBossInterceptorStackFactory"
        name="portal:service=InterceptorStackFactory,type=Cms" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <depends-list optional-attribute-name="InterceptorNames">
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ACL
                </depends-list-element>
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ApprovalWorkflow
                </depends-list-element>
        </depends-list>
</mbean>
```

The first two mbeans define the interceptors and the third mbean, define which interceptors to add to the CMS service.

If you create your own interceptor `org.example.myCMSInterceptor`, the service descriptor file will look like:

```
<mbean code="org.example.myCMSInterceptor"
        name="portal:service=Interceptor,type=Cms,name=MyName" xmbean-dd=""
        xmbean-code="org.jboss.portal.common.system.JBossServiceModelMBean">
        <xmbean />
</mbean>

<!-- ACL Security Interceptor -->
<mbean code="org.jboss.portal.cms.impl.interceptors.ACLInterceptor"
        name="portal:service=Interceptor,type=Cms,name=ACL" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <attribute name="JNDIName">
                java:/portal/cms/ACLInterceptor
        </attribute>
        <attribute name="CmsSessionFactory">
                java:/portal/cms/CMSSessionFactory
        </attribute>
        <attribute name="IdentitySessionFactory">
                java:/portal/IdentitySessionFactory
        </attribute>
        <attribute name="DefaultPolicy">
                <policy>
                        <!-- permissions on the root cms node -->
                        <criteria name="path" value="/">
                                <permission name="cms" action="read">
                                        <role name="Anonymous" />
                                </permission>
                                <permission name="cms" action="write">
                                        <role name="User" />
                                </permission>
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                        <!-- permissions on the default cms node -->
                        <criteria name="path" value="/default">
                                <permission name="cms" action="read">
                                        <role name="Anonymous" />
                                </permission>
                                <permission name="cms" action="write">
                                        <role name="User" />
                                </permission>
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                        <!-- permissions on the private/protected node -->
                        <criteria name="path" value="/default/private">
                                <permission name="cms" action="manage">
                                        <role name="Admin" />
                                </permission>
                        </criteria>
                </policy>
        </attribute>
        <depends optional-attribute-name="AuthorizationManager"
                proxy-type="attribute">
                portal:service=AuthorizationManager,type=cms
        </depends>
        <depends>portal:service=Hibernate,type=CMS</depends>
        <depends>
                portal:service=Module,type=IdentityServiceController
```

```
        </depends>
</mbean>

<!-- Approval Workflow Interceptor -->
<mbean
        code="org.jboss.portal.cms.impl.interceptors.ApprovalWorkflowInterceptor"
        name="portal:service=Interceptor,type=Cms,name=ApprovalWorkflow"
        xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <attribute name="JNDIName">
                java:/portal/cms/ApprovalWorkflowInterceptor
        </attribute>
        <depends>portal:service=Hibernate,type=CMS</depends>
</mbean>
<mbean
        code="org.jboss.portal.server.impl.invocation.JBossInterceptorStackFactory"
        name="portal:service=InterceptorStackFactory,type=Cms" xmbean-dd=""
        xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
        <xmbean />
        <depends-list optional-attribute-name="InterceptorNames">
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ACL
                </depends-list-element>
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ApprovalWorkflow
                </depends-list-element>
        </depends-list>
</mbean>

<!-- CMS Interceptor Registration -->
<mbean
        code="org.jboss.portal.server.impl.invocation.JBossInterceptorStack"
        name="portal:service=InterceptorStack,type=Cms" xmbean-dd=""
        xmbean-code="org.jboss.portal.common.system.JBossServiceModelMBean">
        <xmbean />
        <depends-list optional-attribute-name="InterceptorNames">
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ACL
                </depends-list-element>
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=ApprovalWorkflow
                </depends-list-element>
                <depends-list-element>
                        portal:service=Interceptor,type=Cms,name=MyName
                </depends-list-element>
        </depends-list>
</mbean>
```

## Note

The interceptor order is important !

To check that the interceptors have been correctly added, you can check the JMX console, by going to: `http://localhost.localdomain:8080/jmx-console/HtmlAdaptor?action=inspectMBean&name=portal%3Aservice%3DInterceptorStack%2Ctype%3DCms` You should notice all the interceptors in the attribute "interceptors".

# 19

# Portal Workflow

**Sohil Shah** <sshah @ redhat dot com>

JBoss Portal packages a Workflow Service based on JBPM. This service provides you with the JBPM services that your portal can use to build out the end-user/application workflows that should meet your portal's requirements.

## 19.1. JBPM Workflow Engine Integration

The JBPM Workflow service is packaged as an mbean and takes care of all the low-level JBPM related functions. The configuration is found in jboss-portal.sar/portal-cms.sar/portal-workflow.sar/META-INF/jboss-service.xml. The mbean service configuration is as follows:

```
<!-- Hibernate service -->
<mbean
   code="org.jboss.portal.jems.hibernate.SessionFactoryBinder"
   name="portal:service=Hibernate,type=Workflow"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <depends>jboss.jca:service=DataSourceBinding,name=@portal.datasource.name@</depends>
   <attribute name="DoChecking">true</attribute>
   <attribute name="ConfigLocation">conf/hibernate/workflow/hibernate.cfg.xml</attribute>
   <attribute name="JNDIName">java:/portal/workflow/WorkFlowSessionFactory</attribute>
</mbean>

<!-- Workflow service -->
<mbean
   code="org.jboss.portal.workflow.service.WorkflowServiceImpl"
   name="portal:service=Workflow,type=WorkflowService"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <depends>portal:service=Hibernate,type=Workflow</depends>
   <attribute name="JbpmConfigurationXml">
      <jbpm-configuration>
         <jbpm-context>
            <service name="persistence"
               factory="org.jbpm.persistence.db.DbPersistenceServiceFactory"/>
         </jbpm-context>
         <string name="resource.hibernate.cfg.xml"
            value="conf/hibernate/workflow/hibernate.cfg.xml"/>
         <string name="resource.business.calendar"
            value="org/jbpm/calendar/jbpm.business.calendar.properties"/>
         <string name="resource.default.modules"
            value="org/jbpm/graph/def/jbpm.default.modules.properties"/>
         <string name="resource.converter"
            value="org/jbpm/db/hibernate/jbpm.converter.properties"/>
         <string name="resource.action.types" value="org/jbpm/graph/action/action.types.xml"/>
         <string name="resource.node.types" value="org/jbpm/graph/node/node.types.xml"/>
         <string name="resource.varmapping" value="org/jbpm/context/exe/jbpm.varmapping.xml"/>
```

```
      </jbpm-configuration>
   </attribute>
</mbean>
```

## 19.2. CMS Publish/Approve Workflow Service

The CMS Publish/Approval Workflow feature can be optionally turned on so that, every file that is created or updated needs to go through an **Approval process** before it can be published to go Live. The current implementation, creates a pending queue for managers. The managers can then either approve or reject the publishing of the document in question.

## 1. How activate this feature?

In the following file, jboss-portal.sar/portal-cms.sar/META-INF/jboss-service.xml, activate this feature on the org.jboss.portal.cms.impl.jcr.JCRCMS MBean

```
<mbean
   code="org.jboss.portal.cms.impl.jcr.JCRCMS"
   name="portal:service=CMS"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <!-- The datasource hibernate depends on,
        it can be commented when the file store is used -->
   <depends>jboss.jca:service=DataSourceBinding,name=PortalDS</depends>
   <depends>portal:service=JAASLoginModule</depends>
   <depends>portal:service=Hibernate,type=CMS</depends>
   <depends>portal:service=Module,type=IdentityServiceController</depends>

   <!-- Uncomment this to activate publish/approval workflow integration -->
   <depends optional-attribute-name="ApprovePublishWorkflow"
      proxy-type="attribute">portal:service=ApprovePublish,type=Workflow</depends>

   <depends optional-attribute-name="StackFactory" proxy-type="attribute">
      portal:service=InterceptorStackFactory,type=Cms
   </depends>
   <attribute name="DoChecking">true</attribute>
   <attribute name="DefaultContentLocation">
                                     portal/cms/conf/default-content/default/</attribute>
   <attribute name="DefaultLocale">en</attribute>
   <attribute name="RepositoryName">PortalRepository</attribute>
   <attribute name="HomeDir">${jboss.server.data.dir}${/}portal${/}cms${/}conf</attribute>
   <attribute name="Config">
```

## 2. How to configure this feature?

The configuration for this workflow service is found in the jboss-portal.sar/portal-cms.sar/portal-workflow.sar/META-INF/jboss-service.xml file

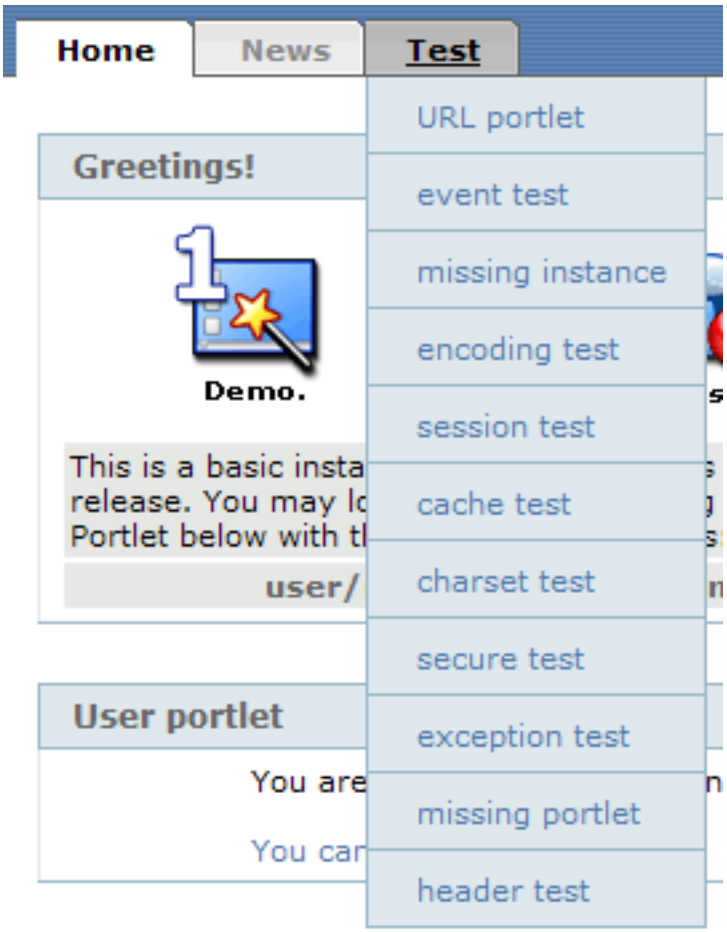
```
<!-- ApprovePublish workflow service -->
<mbean
   code="org.jboss.portal.workflow.cms.ApprovePublishImpl"
   name="portal:service=ApprovePublish,type=Workflow"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <depends optional-attribute-name="WorkflowService" proxy-type="attribute">
      portal:service=Workflow,type=WorkflowService
   </depends>
   <depends optional-attribute-name="IdentityServiceController" proxy-type="attribute">
      portal:service=Module,type=IdentityServiceController
   </depends>
   <!-- JBPM process definition -->
   <attribute name="Process">
      <!-- cms approval workflow -->
      <process-definition name="approval_workflow">
         <start-state>
            <transition to="request_approval"/>
         </start-state>
         <task-node name="request_approval" signal="first">
            <task name="approve_publish">
               <assignment class="org.jboss.portal.cms.workflow.PublishAssignmentHandler"/>
               <event type="task-start">
                  <action class="org.jboss.portal.cms.workflow.FinalizePublish"/>
               </event>
               <exception-handler>
                  <action class="org.jboss.portal.workflow.cms.TaskExceptionHandler"/>
               </exception-handler>
            </task>
            <transition name="approval" to="end"/>
            <transition name="rejection" to="end"/>
         </task-node>
         <end-state name="end"/>
      </process-definition>
   </attribute>
   <!--
   overwrite = false creates the process first time if does not exist, for
   subsequent server restarts, this process definition remains in tact

   overwrite = true creates the process first time if does not exist,
   for subsequent server restarts, it creates a new version of the process definition
   which will be used for processes created from then onwards. Old processes created
   for an older version of the definition remain in tact and use their corresponding
   process definition.

   Typically use overwrite=false and overwrite=true only when a new process definition
   elated to this workflow needs to be deployed
      -->
   <attribute name="Overwrite">false</attribute>
   <!--
a comma separated list of portal roles that are designated
to act as workflow managers. They are allowed to
approve/reject content publish requests
   -->
   <attribute name="ManagerRoles">Admin</attribute>
   <attribute name="JNDIName">java:portal/ApprovePublishWorkflow</attribute>
</mbean>
```

# 20

# Navigation Tabs

**Roy Russo** `<roy at jboss dot org>`

The navigation tabs allow users to navigate the portal pages. This section describes some of the functionality available in configuring them.




## 20.1. Explicit ordering of tabs

Explicit ordering of the tab display, is accomplished via page properties that are defined in your **-object.xml* ( Section 6.2.1 ). Ordering is accomplished using the *order* tag at the page level as a page property.

```
<page>
   <page-name>default</page-name>
   <properties>
      <property>
```

```
         <name>order</name>
         <value>1</value>
      </property>
   </properties>
      ...
</page>
```

## 20.2. Internationalizing tab labels

JBoss Portal uses Resource bundles to localize the tab naming for international users. The resource files can be found in *jboss-portal.sar/conf/bundles* and have the names *Resource_*.properties*

The resource files provide a mapping between the name of the page, as defined in the *-object.xml, and a localized value to display in the tab. For example, our standard bundled pages: Home, Admin, Test, News, are mapped as such in the *Resource_fr.properties* file, for French users:

```
PAGENAME_default=Accueil
PAGENAME_Admin=Admin
PAGENAME_Test=Test
PAGENAME_News=Actualités
```

So the mapping pattern is *PAGENAME_[Name in *-object.xml]=[translated value]*

# 21

# Layouts and Themes

**Martin Holzner** `<mholzner@novell.com>`

**Mark Fernandes** `<mfernandes@novell.com>`

**Thomas Heute** `<theute@jboss.org>`

## 21.1. Overview

Portals usually render the markup fragments of several portlets, and aggregate these fragments into one page that ultimately gets sent back as response. Each portlet on that page will be decorated by the portal to limit the real estate the portlet has on the page, but also to allow the portal to inject extra functionality on a per portlet basis. Classic examples of this injection are the maximize, minimize and mode change links that will appear in the portlet window , together with the title.

Layouts and themes allow to manipulate the look and feel of the portal. Layouts are responsible to render markup that will wrap the markup fragments produced by the individual portlets. Themes, on the other hand, are responsible to style and enhance this markup.

In JBoss Portal, layouts are implemented as a JSP or a Servlet. Themes are implemeted using CSS Style sheets, javascript and images. The binding elemement between layouts and themes are the class and id attributes of the rendered markup.

JBoss Portal has the concept of regions on a page. When a page is defined, and portlet windows are assigned to the page, the region, and order inside the region, has to be specified as well. For portal layouts this has significant meaning. It defines the top most markup container that can wrap portlet content (other then the static markup in the JSP itself). In other words: from a layout perspective all portlets of a page are assigned to one or more regions. Each region can contain one or more portlets. To render the page content to return from a portal request, the portal has to render the layout JSP, and for each region, all the portlets in the region.

Since the markup around each region, and around each portlet inside that region, is effectively the same for all the pages of a portal, it makes sense to encapsulate it in its own entity.

To implement this encapsulation there are several ways:

- JSPs that get included from the layout JSP for each region/portlet
- a taglib that allows to place region, window, and decoration tags into the layout JSP

- a taglib that uses a pluggable API to delegate the markup generation to a set of classes

In JBoss Portal you can currently see two out of these approaches, namley the first and the last. Examples for the first can be found in the portal-core.war, implemented by the nodesk and phalanx layouts. Examples for the third approach can be found in the same war, implemented by the industrial and Nphalanx layout. What encapsulates the markup generation for each region, window, and portlet decoration in this last approach is what's called the RenderSet.

The RenderSet consist of four interfaces that correspond with the four markup containers that wrap the markup fragments of one of more portlets:

- Region
- Window
- Decoration
- Portlet Content

While we want to leave it open to you to decide which way to implement your layouts and themes, we strongly believe that the last approach is superior, and allows for far more flexibility, and clearer separation of duties between portal developers and web designers.

The last topic to introduce in this overview is the one of portal themes. A theme is a collection of web design artifacts. It defines a set of css, java script and image files that together decide about the look and feel of the portal page. The theme can take a wide spectrum of control over the look and feel. It can limit itself to decide fonts and colors, or it can take over a lot more and decide the placement (location) of portlets and much more.

## 21.2. Header

### 21.2.1. Overview

The default header is divided into two parts, links to pages displayed as tabs and links to navigate between portals and dahsboards as well as loggin in and out. Those two parts are included into the template thanks to the layout as defined in Section 21.3. In fact, the region named, `dashboardnav` will include the navigation links, while the region named `navigation` will include the navigation tabs. It is then easy to hide one and/or the other by removing the corresponding inclusion in the layout.


Scheenshot of the header with the 'renaissance' theme

**Note**

Here, we use split content from rendering by using a CSS style sheet, it allow us to change the display by switching the CSS without affecting the content. THe Maple theme will display the links on the left side with a different font for example. THis is up to you to choose or not this approach

To customize the header there are several options detailed after.

- The first option would simply require to modify the theme CSS, by doing this you could change the fonts, the way tabs are rendered, colors and many other things but not change the content.
- The second option is to modify the provided JSPs, `header.jsp` and `tabs.jsp`. It gives you more flexibility than the previous solution on modifying the content. Links to legacy application could easily be added, URLs could be arranged differently, the CSS approach could be replaced by good old HTML, CSS style names could be changed... The drawback of this method compare to the next one is the limitation in what is accessible from the JSP.

#### 21.2.1.1. Writing his own JSPs

The content of those two parts are displayed thanks to two different JSP pages. By default you would find those pages in the directory `portal-core.war/WEB-INF/jsp/header/`. The file `header.jsp` is used to display the links that are displayed on the upper right of the default theme. The file `tabs.jsp` is used to display the pages tabs appearing on the left.

Again, you have several choices, either to edit the included JSPs directly or create your own, store them in a web application then edit the following file: `jboss-portal.sar/META-INF/jboss-service.xml`. The interesting part in that file is the following:

```
<mbean
   code="org.jboss.portal.core.aspects.controller.PageCustomizerInterceptor"
   name="portal:service=Interceptor,type=Command,name=PageCustomizer"
   xmbean-dd=""
   xmbean-code="org.jboss.portal.jems.as.system.JBossServiceModelMBean">
   <xmbean/>
   <attribute name="TargetContextPath">/portal-core</attribute>
   <attribute name="HeaderPath">/WEB-INF/jsp/header/header.jsp</attribute>
   <attribute name="TabsPath">/WEB-INF/jsp/header/tabs.jsp</attribute>
   <depends
      optional-attribute-name="PortalAuthorizationManagerFactory"
      proxy-type="attribute">portal:service=PortalAuthorizationManagerFactory</depends>
</mbean>
```

The three attibutes are:

- TargetContextPath: Defines the web application context where the JSPs are located
- HeaderPath: Defines the location (in the web application previously defined) of the JSP in charge of writing the header links
- TabsPath: Defines the location (in the web application previously defined) of the JSP in charge of writing the pages links (note that it doesn't have to be renderer as tabs)

Writing the header JSP

A couple of request attributes are set so that they can be used by the JSP, here is the list of attributes and their meaning:

- `org.jboss.portal.header.USER`: A `org.jboss.portal.identity.User` object of the logged-in user, null if

the user is not logged-in.

- `org.jboss.portal.header.LOGIN_URL`: URL to logging-in.
- `org.jboss.portal.header.DASHBOARD_URL`: URL to the dashboard, null if the user is already on the dashboard, null if the user is on the default portal already.
- `org.jboss.portal.header.DEFAULT_PORTAL_URL`: URL to the default page of the portal named 'default', null if the user is on the default portal already.
- `org.jboss.portal.header.ADMIN_PORTAL_URL`: URL to the default page of the admin portal (named 'admin'), null if the user is on the admin portal already.
- `org.jboss.portal.header.EDIT_DASHBOARD_URL`: URL to the page content editor of the dashboard, set only if the user is on the dashboard, null otherwise.
- `org.jboss.portal.header.COPY_TO_DASHBOARD_URL`: URL to copy a page from a portal to the personal dashboard, null if the user is on the dashboard.
- `org.jboss.portal.header.SIGN_OUT_URL`: URL to log out the portal.

Every attribute that is an URL attribute is an object implementing the *org.jboss.portal.api.PortalURL* interface. Therefore it is possible to generate the URL using the *toString()* method and change various things related to the URL. With that in hand, if someone just wanted to display the logged-in username and a link to log out, he could write:

```
<%@ page import="org.jboss.portal.identity.User" %>

<%
   User user = (User) request.getAttribute("org.jboss.portal.header.USER");
   PortalURL signOutURL = (PortalURL)request.getAttribute("org.jboss.portal.header.SIGN_OUT_URL");
   PortalURL loginURL = (PortalURL)request.getAttribute("org.jboss.portal.header.LOGIN_URL");


   if (user == null)
   {
%>
   <a href="<%= loginURL %>">Login</a>
<%
   }
   else
   {
%>
Logged in as: <%= user.getUserName() %>
<br/>
<a href="<%= signOutURL %>">Logout</a>
<%
   }
%>
```

Writing the tabs JSP

A couple of request attributes are set so that they can be used by the JSP, here is the list of attributes and their meaning:

- `org.jboss.portal.api.PORTAL_NODE`: A `org.jboss.portal.api.node.PortalNode` object of the root Portal node. Authorized children and siblings of this object are accessible.

- `org.jboss.portal.api.PORTAL_RUNTIME_CONTEXT`: A `org.jboss.portal.api.PortalRuntimeContext` object that can be used to render URLs.

The default file in charge of displaying the tabs can be found in: `portal-core.war/WEB-INF/jsp/header/`

# 21.3. Layouts

## 21.3.1. How to define a Layout

Layouts are used by the portal to produce the actual markup of a portal response. After all the portlets on a page have been rendered and have produced their markup fragments, the layout is responsible for aggregating all these pieces, mix them with some ingredients from the portal itself, and at the end write the response back to the requesting client.

Layouts can be either a JSP or a Servlet. The portal determines the layout to use via the configured properties of the portal, or the requested page. Both, portal and pages, can define the layout to use in order to render their content. In case both define a layout, the layout defined for the page will overwrite the one defined for the portal.

A Layout is defined in the layout descriptor named portal-layouts.xml. This descriptor must be part of the portal application, and is picked up by the layout deployer. If the layout deployer detects such a descriptor in a web application, it will parse the content and register the layouts with the layout service of the portal. Here is an example of such a descriptor file:

```
<layouts>
   <layout>
      <name>phalanx</name>
      <uri>/phalanx/index.jsp</uri>
   </layout>
   <layout>
      <name>industrial</name>
      <uri>/industrial/index.jsp</uri>
      <uri state="maximized">/industrial/maximized.jsp</uri>
   </layout>
</layouts>
```

## 21.3.2. How to use a Layout

### 21.3.2.1. Declarative use

Portals and pages can be configured to use a particular layout. The connection to the desired layout is made in the portal descriptor (YourNameHere-object.xml). Here is an example of such a portal descriptor:

```
<portal>
   <portal-name>default</portal-name>
   <properties>
      <!-- Set the layout for the default portal -->
      <!-- see also portal-layouts.xml -->
      <property>
         <name>layout.id</name>
         <value>phalanx</value>
      </property>
   </properties>
```

```
   <pages>
      <page>
         <page-name>theme test</page-name>
         <properties>
            <!-- set a difference layout for this page -->
            <property>
               <name>layout.id</name>
               <value>industrial</value>
            </property>
         </properties>
      </page>
   </pages>
</portal>
```

The name specified for the layout to use has to match one of the names defined in the portal-layouts.xml descriptor of one of the deployed applications.

As you can see, the portal or page property points to the layout to use via the name of the layout. The name has been given to the layout in the layout descriptor. It is in that layout descriptor where the name gets linked to the physical resource (the JSP or Servlet) that will actually render the layout.

#### 21.3.2.2. Programatic use

To access a layout from code, you need to get a reference to the LayoutService interface. The layout service is an mbean that allows access to the PortalLayout interface for each layout that was defined in a portal layout descriptor. As a layout developer you should never have to deal with the layout service directly. Your layout hooks are the portal and page properties to configure the layout, and the layout strategy, where you can change the layout to use for the current request, before the actual render process begins.

### 21.3.3. Where to place the Descriptor files

Both descriptors, the portal and the theme descriptor, are located in the WEB-INF/ folder of the deployed portal application. Note that this is not limited to the portal-core.war, but can be added to any WAR that you deploy to the same server. The Portal runtime will detect the deployed application and introspect the WEB-INF folder for known descriptors like the two metioned here. If present, the appropriate meta data is formed and added to the portal runtime. From that time on the resources in that application are available to be used by the portal. This is an elegant way to dynamically add new layouts or themes to the portal without having to bring down , or even rebuild the core portal itself.

### 21.3.4. Layout JSP-tags

The portal comes with a set of JSP tags that allow the layout developer faster development.

There are currently two taglibs, containing tags for different approaches to layouts:

- portal-layout.tld
- theme-basic-lib.tld

The theme-basic-lib.tld contains a list of tags that allow a JSP writer to access the state of the rendered page content. It is built on the assumption that regions, portlet windows and portlet decoration is managed inside the JSP.

The portal-layout.tld contains tags that work under the assumption that the RenderSet will take care of how regions, portlet windows and the portlet decoration will be rendered. The advantage of this approach is that the resulting JSP is much simpler and easier to read and maintain.

Here is an example layout JSP that uses tags from the latter:

```
               <%@ taglib uri="/WEB-INF/theme/portal-layout.tld" prefix="p" %>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
                      "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
   <head>
      <title>JBoss Portal</title>
      <meta http-equiv="Content-Type" content="text/html;" />
      <p:theme themeName='renaissance' />
      <p:headerContent />
   </head>
   <body id="body">
      <div id="portal-container">
         <div id="sizer">
            <div id="expander">
               <div id="logoName"></div>
               <table border="0" cellpadding="0" cellspacing="0" id="header-container">
                  <tr>
                     <td align="center" valign="top" id="header">
                        <div id="spacer"></div>
                     </td>
                  </tr>
               </table>
               <div id="content-container">
                  <p:region regionName='This-Is-The-Page-Region-To-Query-The-Page'
                     regionID='This-Is-The-Tag-ID-Attribute-To-Match-The-CSS-Selector'/>
                  <p:region regionName='left' regionID='regionA'/>
                  <p:region regionName='center' regionID='regionB'/>
                  <hr class="cleaner" />
                  <div id="footer-container" class="portal-copyright">Powered by
                     <a class="portal-copyright"
                        href="http://www.jboss.com/products/jbossportal">
                        JBoss Portal
                     </a>
                  </div>
               </div>
            </div>
         </div>
      </div>
   </body>
</html>
```

### 1. The theme tag

The theme tag looks for the determined theme of the current request (see Portal Themes for more details). If no theme was determined, this tag allows an optional attribute 'themeName' that can be used to specifiy a default theme to use as a last resort. Based on the determined theme name, the ThemeService is called to lookup the theme with this name and to get the resources associated with this theme. The resulting style and link elements are injected, making sure that war context URLS are resolved appropriately.

### 2. The headerContent tag

This tags allows portlets to inject content into the header. More details about this function are mentioned in the 'other Theme Functions' section of this document.

#### 3. The region tag

The region tag renders all the portlets in the specified region of the current page, using the determined RenderSet to produce the markup that surrounds the individual portlet markup fragments. The regionName attribute functions as a query param into the current page. It determines from what page region the portlets will be rendered in this tag. The regionID attribute is what the RenderSet can use to generate a css selector for this particular region. In case of the divRenderer, a DIV tag with an id attribute corresponding to the provided value will be rendered for this region. This id in turn can be picked up by the CSS to style the region.

## 21.4. RenderSets

### 21.4.1. What is a RenderSet

A RenderSet can be used to produce the markup containers around portlets and portlet regions. The markup for each region, and each portlet window in a region is identical. Further more, it is most likely identical across several layouts. The way portlets are arranged and decorated will most likely not change across layouts. What will change is the look and feel of the decoration, the images, fonts, and colors used to render each portlet window on the page. This is clearly a task for the web designer, and hence should be realized via the portal theme. The layout only needs to provide enough information to the theme so that it can do its job. The RenderSet is exactly that link between the layout and the theme that takes the information available in the portal and renders markup containing the current state of the page and each portlet on it. It makes sure that the markup around each region and portlet contains the selectors that the theme css needs to style the page content appropriately.

A RenderSet consists of the implementations of four interfaces. Each of those interfaces corresponds to a markup container on the page.

Here are the four markup containers and their interface representation:

- Region - RegionRenderer
- Window - WindowRenderer
- Decoration - DecorationRenderer
- Portlet Content - PortletRenderer

All the renderer interfaces are specified in the org.jboss.portal.theme.render package.

The four markup containers are hierarchical. The region contains one or more windows. A window contains the portlet decoration and the portlet content.

The region is responsible for arranging the positioning and order of each portlet window. Should they be arranged in a row or a column? If there are more then one portlet window in a region, in what order should they appear?

The window is responsible for placing the window decoration, including the portlet title, over the portlet content, or under, or next to it.

The decoration is responsible for inserting the correct markup with the links to the portlet modes and window states currently available for each portlet.

The portlet content is responsible for inserting the actually rendered markup fragment that was produced by the portlet itself.

## 21.4.2. How is a RenderSet defined

Similar to layouts, render sets must be defined in a RenderSet descriptor. The RenderSet descriptor is located in the WEB-INF/layout folder of a web application, and is named portal-renderSet.xml. Here is an example descriptor:

```
              <?xml version="1.0" encoding="UTF-8"?>
<portal-renderSet>
 <renderSet name="divRenderer">
  <set content-type="text/html">
   <region-renderer>org.jboss.portal.theme.impl.render.DivRegionRenderer</region-renderer>
   <window-renderer>org.jboss.portal.theme.impl.render.DivWindowRenderer</window-renderer>
   <portlet-renderer>org.jboss.portal.theme.impl.render.DivPortletRenderer</portlet-renderer>
   <decoration-renderer>
     org.jboss.portal.theme.impl.render.DivDecorationRenderer
   </decoration-renderer>
  </set>
 </renderSet>
 <renderSet name="emptyRenderer">
  <set content-type="text/html">
   <region-renderer>org.jboss.portal.theme.impl.render.EmptyRegionRenderer</region-renderer>
   <window-renderer>org.jboss.portal.theme.impl.render.EmptyWindowRenderer</window-renderer>
   <portlet-renderer>
     org.jboss.portal.theme.impl.render.EmptyPortletRenderer
   </portlet-renderer>
   <decoration-renderer>
     org.jboss.portal.theme.impl.render.EmptyDecorationRenderer
   </decoration-renderer>
  </set>
 </renderSet>
</portal-renderSet>
```

## 21.4.3. How to specify what RenderSet to use

Analogous to how a strategy is specified, the RenderSet can be specified as a portal or page property, or a particular layout can specify an anonymous RenderSet to use. Here is an example of a portal descriptor:

```
              <?xml version="1.0" encoding="UTF-8"?>
<portal>
  <portal-name>default</portal-name>
    <properties>
      <!-- use the divRenderer for this portal -->
      <property>
        <name>theme.renderSetId</name>
        <value>divRenderer</value>
      </property>
    </properties>
    <pages>
      <default-page>default</default-page>
      <page>
        <page-name>default</page-name>
```

```
        <properties>
          <!-- overwrite the portal's renderset for this page -->
          <property>
            <name>theme.renderSetId</name>
            <value>emptyRenderer</value>
          </property>
        </properties>
      <window>
        <window-name>TestPortletWindow</window-name>
        <instance-ref>TestPortletInstance</instance-ref>
        <region>center</region>
        <height>0</height>
      </window>
    </page>
  </pages>
</portal>
```

Here is an example of a layout descriptor with an anonymous RenderSet:

```
              <?xml version="1.0" encoding="UTF-8"?>
<layouts>
<renderSet>
<set content-type="text/html">
<region-renderer>org.foo.theme.render.MyRegionRenderer</region-renderer>
<window-renderer>org.foo.theme.render.MyWindowRenderer</window-renderer>
<portlet-renderer>org.foo.theme.render.MyPortletRenderer</portlet-renderer>
<decoration-renderer>org.foo.theme.render.MyDecorationRenderer</decoration-renderer>
</set>
</renderSet>
<layout>
<name>generic</name>
<uri>/generic/index.jsp</uri>
<uri state="maximized">/generic/maximized.jsp</uri>
</layout>
</layouts>
```

Again, anologous to layout strategies, the anonymous RenderSet overwrites the one specified for the page, and that overwrites the one specified for the portal. In other words: all pages that use the layout that defines an anonymous RenderSet will use that RenderSet, and ignore what is defined as RenderSet for the portal or the page.

In addition to specifying the renderSet for a portal or a page, each individual portlet window can define what renderSet to use for the one of the three aspects of a window, the window renderer, the decoration renderer, and the portlet renderer. This feature allow you to use the the window renderer implementation from one renderSet, and the decoration renderer from another. Here is an example for a window that uses the implementations of the emptyRenderer renderSet for all three aspects:

```
              <window>
   <window-name>NavigationPortletWindow</window-name>
   <instance-ref>NavigationPortletInstance</instance-ref>
   <region>navigation</region>
   <height>0</height>
   <!-- overwrite portal and page properties set for the renderSet for this window -->
   <properties>
      <!-- use the window renderer from the emptyRenderer renderSet -->
      <property>
         <name>theme.windowRendererId</name>
         <value>emptyRenderer</value>
      </property>
      <!-- use the decoration renderer from the emptyRenderer renderSet -->
      <property>
         <name>theme.decorationRendererId</name>
```

```
         <value>emptyRenderer</value>
      </property>
      <!-- use the portlet renderer from the emptyRenderer renderSet -->
      <property>
         <name>theme.portletRendererId</name>
         <value>emptyRenderer</value>
      </property>
   </properties>
</window>
```

# 21.5. Themes

## 21.5.1. What is a Theme

A portal theme is a collection of CSS styles, JavaScript files, and images, that all work together to style and enhance the rendered markup of the portal page. The theme works together with the layout and the RenderSet in procuding the content and final look and feel of the portal response. Through clean separation of markup and styles a much more flexible and powerfull approach to theming portals is possible. While this approach is not enforced, it is strongly encouraged. If you follow the definitions of the Theme Style Guide (see later), it is not necessary to change the layout or the strategy, or the RenderSet to achieve very different look and feels for the portal. All you need to change is the theme. Since the theme has no binary dependencies, it is very simple to swapt it, or change individual items of it. No compile or redeploy is necessary. Themes can be added or removed while the portal is active. Themes can be deployed in separate web applications furthering even more the flexibility of this approach. Web developers don't have to work with JSPs. They can stay in their favorite design tool and simple work against the exploded war content that is deployed into the portal. The results can be validated life in the portal.

## 21.5.2. How to define a Theme

Themes can be added as part of any web application that is deployed to the portal server. All what is needed is a theme descriptor file that is part of the deployed archive. This descriptor indicates to the portal what themes and theme resources are becoming available to the portal. The theme deployer scans the descriptor and adds the theme(s) to the ThemeService, which in turn makes the themes available for consumption by the portal. Here is an example of a theme descriptor:

```


               <themes>
<theme>
<name>nodesk</name>
<link href="/nodesk/css/portal_style.css" rel="stylesheet" type="text/css" />
<link rel="shortcut icon" href="/images/favicon.ico" />
</theme>
<theme>
<name>phalanx</name>
<link href="/phalanx/css/portal_style.css" rel="stylesheet" type="text/css" />
<link rel="shortcut icon" href="/images/favicon.ico" />
</theme>

<theme>
<name>industrial-CSSSelect</name>
<link rel="stylesheet" id="main_css" href="/industrial/portal_style.css" type="text/css" />
<link rel="shortcut icon" href="/industrial/images/favicon.ico" />

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

```
// MAF - script to switch current tab and css in layout...
function switchCss(currentTab,colNum) {
var obj = currentTab;
var objParent = obj.parentNode;

if (document.getElementById("current") != null) {
var o = document.getElementById("current");
o.setAttribute("id","");
o.className = 'hoverOff';
objParent.setAttribute("id","current");
}

var css = document.getElementById("main_css");
source = css.href;
if (colNum == "3Col") {
if (source.indexOf("portal_style.css" != -1)) {
source = source.replace("portal_style.css","portal_style_3Col.css");
}
if (source.indexOf("portal_style_1Col.css" != -1)) {
source = source.replace("portal_style_1Col.css","portal_style_3Col.css");
}
}
if (colNum == "2Col") {
if (source.indexOf("portal_style_3Col.css" != -1)) {
source = source.replace("portal_style_3Col.css","portal_style.css");
}
if (source.indexOf("portal_style_1Col.css" != -1)) {
source = source.replace("portal_style_1Col.css","portal_style.css");
}
}
if (colNum == "1Col") {
if (source.indexOf("portal_style_3Col.css" != -1)) {
source = source.replace("portal_style_3Col.css","portal_style_1Col.css");
}
if (source.indexOf("portal_style.css" != -1)) {
source = source.replace("portal_style.css","portal_style_1Col.css");
}
}

css.href = source;
}
</script>
</theme>
</themes>
```

Themes are defined in the portal-themes.xml theme descriptor, which is localted in the WEB-INF/ folder of the web application.

## 21.5.3. How to use a Theme

Again, analogous to the way it is done for layouts, themes are specified in the portal descriptor as a portal or page property. The page property overwrites the portal property. In addition to these two options, themes can also be specified as part of the theme JSP tag , that is placed on the layout JSP. Here is an example portal descriptor that specifies the phalanx theme as the theme for the entire portal, and the industrial theme for the theme test page:

```
             <portal>
  <portal-name>default</portal-name>
  <properties>
    <!-- Set the theme for the default portal -->
    <property>
```

```
      <name>layout.id</name>
      <value>phalanx</value>
    </property>
  </properties>
  <pages>
    <page>
      <page-name>theme test</page-name>
      <properties>
        <!-- set a difference layout for this page -->
        <property>
          <name>layout.id</name>
          <value>industrial</value>
        </property>
      </properties>
      <window>
        <window-name>CatalogPortletWindow</window-name>
        <instance-ref>CatalogPortletInstance</instance-ref>
        <region>left</region>
        <height>0</height>
      </window>
    </page>
  </pages>
</portal>
```

And here is an example of a layout JSP that defines a default theme to use if no other theme was defined for the portal or page:

```
               <%@ taglib uri="/WEB-INF/theme/portal-layout.tld" prefix="p" %>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
                      "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title><%= "JBoss Portal :: 2.2 early (Industrial)" %></title>
    <meta http-equiv="Content-Type" content="text/html;" />
    <p:theme themeName='industrial' />
    <p:headerContent />
  </head>
  <body id="body">
    <div id="portal-container">
      <div id="sizer">
        <div id="expander">
          <div id="logoName"></div>
          <table border="0" cellpadding="0" cellspacing="0"
            id="header-container">
            <tr>
              <td align="center" valign="top" id="header">
                <div id="spacer"></div>
              </td>
            </tr>
          </table>
          <div id="content-container">
            <p:region
              regionName='This-Is-The-Page-Region-To-Query-The-Page'
              regionID='This-Is-The-Tag-ID-Attribute-To-Match-The-CSS-Selector' />
            <p:region regionName='left' regionID='regionA' />
            <p:region regionName='center' regionID='regionB' />
            <hr class="cleaner" />
            <div id="footer-container" class="portal-copyright">
              Powered by
              <a class="portal-copyright"
                href="http://www.jboss.com/products/jbossportal">
                JBoss Portal
              </a>
              <br />
              Theme by
```

```
              <a class="portal-copyright"
                href="http://www.novell.com">
                Novell
              </a>
            </div>
          </div>
        </div>
      </div>
    </div>
  </body>
</html>
```

For the function of the individual tags in this example, please refere to the layout section of this document.

### 21.5.4. How to write your own Theme

Ask your favorite web designer and/or consult the Theme Style Guide in this document.

## 21.6. Other Theme Functionalities and Features

This section contains all the functionalities that don't fit with any of the other topics. Bits and pieces of useful functions that are related to the theme and layout functionality.

### 21.6.1. Content Rewriting and Header Content Injection

Portlets can have their content rewritten by the portal. This is useful if you want to uniquely namespace markup (JavaScript functions for example) in the scope of a page. The rewrite functionality can be applied to the portlet content (the markup fragment) and to content a portlet wants to inject into the header. The rewrite is implemented as specified in the WSRP (OASIS: Web Services for Remote Portlets; producer write). As a result of this, the token to use for rewrite is the WSRP specified "wsrp_rewrite_". If the portlet sets the following response property

```
res.setProperty("WSRP_REWRITE","true");
```

all occurences of the wsrp_rewrite_ token in the portlet fragment will be replaced with a unique token (the window id). If the portlet also specifies content to be injected into the header of the page, that content is also subject to this rewrite.

```
res.setProperty("HEADER_CONTENT", "
               <script>function wsrp_rewrite_OnFocus(){alert('hello button');}</script>
               ");
```

Note that in order for the header content injection to work, the layout needs to make use of the headerContent JSP tag, like:

```
               <%@ taglib uri="/WEB-INF/theme/portal-layout.tld" prefix="p" %>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
                      "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
  <head>
    <title><JBoss Portal 2.2 early</title>
    <meta http-equiv="Content-Type" content="text/html;" />

    <p:headerContent />
```

```
  </head>
  <body id="body">
    <p>...</p>
  </body>
</html>
```

### 21.6.2. Declarative CSS Style injection

If a portlet needs a CSS style sheet to be injected via a link tag in the page header, it can do so by providing the context relative URI to the file in the jboss-portlet.xml descriptor, like:

```
              <portlet-app>
  <portlet>
    <portlet-name>HeaderContentPortlet</portlet-name>
    <header-content>
      <link rel="stylesheet" type="text/css" href="/portlet-styles/HeaderContent.css"
                                       title="" media="screen" />
    </header-content>
  </portlet>
</portlet-app>
```

This functionality, just like the previously described header content injection, requires the layout JSP to add the "headerContent" JSP tag (see example above). One thing to note here is the order of the tags. If the headerContent tag is placed after the theme tag, it will allow portlet injected CSS files to overwrite the theme's behaviour, making this feature even more powerful!

### 21.6.3. Disabling Portlet Decoration

One possible use of window properties is demonstrated in the divRenderer RenderSet implementation. If a window definition (in the portal descriptor) contains a property like:

```
              <window>
   <window-name>HintPortletWindow</window-name>
   <instance-ref>HintPortletInstance</instance-ref>
   <region>center</region>
   <height>0</height>
   <properties>
      <!-- turn the decoration off for this portlet (i.e. no title and mode/state links) -->
      <property>
         <name>theme.decorationRendererId</name>
         <value>emptyRenderer</value>
      </property>
   </properties>
</window>
```

the DivWindowRenderer will use the decoration renderer from the emptyRenderer RenderSet to render the decoration for this window (not delegate to the DivDecorationRenderer). As a result, the portlet window will be part of the rendered page, but it will not have a title, nor will it have any links to change the portlet mode or window state.

## 21.7. Theme Style Guide (based on the Industrial theme)

## 21.7.1. Overview

> **Note**
> This section to be updated soon with new CSS selectors found in JBoss Portal 2.6. The cuirrent definitions remain, but the newer additions with regards to dashboards/drag-n-drop have not been documented as of yet.

This document outlines the different selectors used to handle the layout and look/feel of the Industrial theme included in the JBoss portal.

A couple of things to know about the theming approach discussed below:

- Main premise behind this approach was to provide a clean separation between the business and presentation layer of the portal. As we go through each selector and explain the relation to the visual presentation on the page, this will become more apparent.
- The flexibility of the selectors used in the theme stylesheet allow a designer to very easily customize the visual aspects of the portal, thereby taking the responsibility off of the developers hands through allowing the designer to quickly achieve the desired effect w/out the need to dive down into code and/or having to deploy changes to the portal. This saves time and allows both developers and designers to focus on what they do best.
- This theme incorporates a liquid layout approach which allows elements on a page to expand/contract based on screen resolution and provides a consistent look across varying display settings. However, the stylesheet is adaptable to facilitate a fixed layout and/or combination approach where elements are pixel based and completely independent of viewport.
- The pieces that make up the portal theme consist of at least one stylesheet and any associated images. Having a consolidated set of files to control the portal look and feel allows administrators to effortlessly swap themes on the fly. In addition, this clean separation of the pieces that make up a specific theme will enable sharing and collaboration of different themes by those looking to get involved or contribute to the open source initiative.

## 21.7.2. Main Screen Shot

Screen shot using color outline of main ID selectors used to control presentation and layout:


- Red Border - portal-container
- Yellow Border - header-container
- Orange Border - content-container
- Blue Border - regionA/regionB
- Green Border - portlet-container

## 21.7.3. List of CSS Selectors

The following is a list of the selectors used in the theme stylesheet, including a brief explanation of how each selector is used in the portal:

- Portal Body Selector

```
#body {
```

```
   background-color: #FFFFFF;
   background-image: url( images/header_bg.gif );
   background-repeat: repeat-x;
   margin: 0px;
   padding: 0px;
   font-family: Verdana, Arial, Helvetica, sans-serif;
   background-repeat: repeat-x;
   font-size: 11px;
   color: #656565;
}
```

Usage: This selector controls the background of the page, and can be modified to set a base font-family, layout margin, etc. that will be inherited by all child elements that do not have their own individual style applied. By default, the selector pulls an image background for the page.

- Portal Header Selectors

```
#spacer {
   width: 770px;
   line-height: 0px;
   font-size: 0px;
   height: 0px;
}
```

Usage: Spacer div used to keep header at certain width regardless of display size. This is done to avoid overlapping of tab navigation in header. To account for different display sizes, this selector can be modified to force a horizontal scroll in the browser which eliminates any issue with overlapping elements in the header.

```
#header-container {
  background-repeat: repeat-y;
  height: 100%;
  min-width: 1000px;
  width: 100%;
  position: absolute;
  bottom: 5px;*/
 }
```

Usage: Wrapper selector used to control the position of the header on the page. This selector is applied as an ID on the table used to structure the header. You can adjust the attributes to reposition the header location on the page and/or create margin space on the top, right, bottom and left sides of the header.

Screenshot:


```
#header {
   height: 65px;
   width: 100%;
   padding: 0px;
   margin: 0px;
   z-index: 1;
}
```

Usage: This selector applies the header background image in the portal. It can be adjusted to accommodate a header background of a certain width/height or, as it currently does, repeat the header graphic so that it tiles across the header portion of the page.

```
#logoName {
   background-image: url( images/logo.gif );
   background-repeat: no-repeat;
   float: left;
   width: 250px;
   height: 25px;
   z-index: 2;
   position: absolute;
   left: 20px;
   top: 10px;
}
```

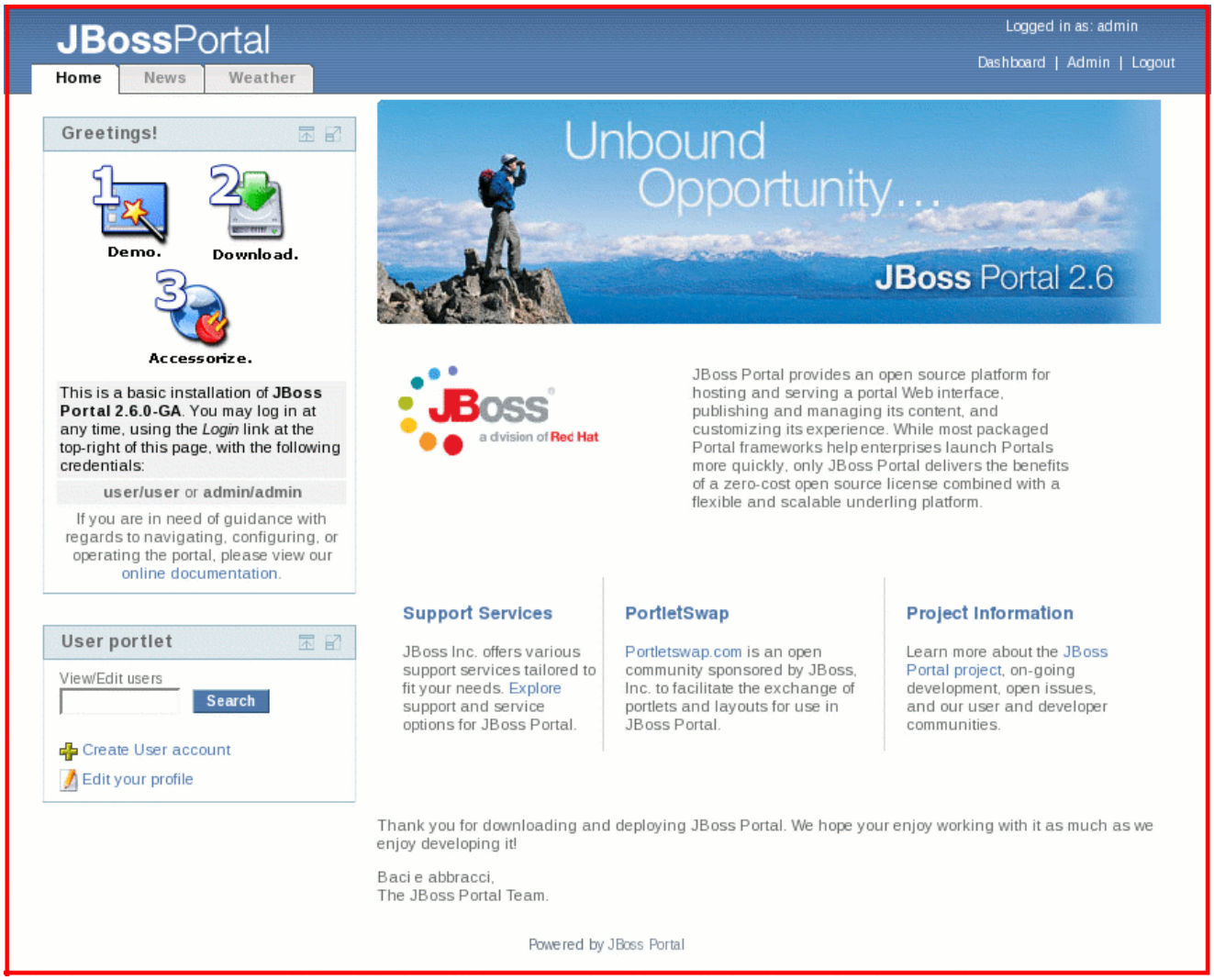
Usage: Logo selector which is used to brand the header with a specific, customized logo. The style is applied as an ID on an absolutely positioned DIV element which enables it to be moved to any location on the page, and allows it to be adjusted to accommodate a logo of any set width/height.

- Portal Layout Region Selectors

```
#portal-container {
/* part of below IE hack to preserve min-width for portlet regions */
/*width: 100%;*/
   margin: 4px 2% 0px 2%;

   padding: 0 350px 0 350px;
}
```

Usage: Wrapper for entire portal which starts/ends after/before the BODY tag (see red border in screen shot). The padding attribute for this selector is used to preserve a minimum width setting for the portlet regions (discussed below). Similar to body selector, this style can modified to create margin or padding space on the top, right, bottom and left sections of the page. It provides the design capability to accommodate most layouts (e.g. a centered look such as the phalanx theme where there is some spacing around the content of the portal, or a full width look as illustrated in the Industrial theme).

Screenshot:




```
/* min width for IE */
#expander {
   position: relative;
   padding: 0 0 0 0;

   margin: 0 -350px 0 -350px;
   min-width: 770px;
   padding: 0 0 0 0;
}

/* min width hack for IE */
#sizer {
   width: 100%;
}

/* IE Hack \*/
* html #portal-container,
   * html #sizer,
   * html #expander {
   height: 0;
}
```

Usage: These selectors are used in conjunction with the above, portal-container, selector to preserve a minimum width setting for the portlet regions. This was implemented to maintain a consistent look across different browsers.

```
#content-container {
   height: 100%;
   text-align: left;
   width: 100%;
   min-width: 770px;
   /*
   position: absolute;
   top: 70px;
   left: 0px; / * z-index: 1; * /
   / * part of below IE hack
padding: 0 350px 0 350px; * /
   padding: 0px 100px 0px 0px;
   */
}
```

Usage: Wrapper that contains all regions in portal with the exception of the header (see orange border in screen shot). Its attributes can be adjusted to create margin space on page, as well as control positioning of the area of the page below the header.

```
/* portlet regions within content-container. this includes footer-container. */
#regionA {
   width: 30%;
   float: left;
   margin: 0px;
   padding: 0px;
   min-width: 250px; /*height: 300px;*/
}
```

Usage: First portlet region located within the content-container (see blue border in screen shot). This selector controls the width of the region as well as its location on the page. Designers can very easily reposition this region in the portal (e.g. swap left regionA with right regionB, etc.) by adjusting the attributes of this selector.

```
#regionB {
   /* test to swap columns..
margin: 0 30% 0 0; */

   /*two column layout
margin: 0 0 0 30%;*/
   padding: 0px; /* test to add 3rd region in layout...*/
   width: 67%;
   float: left; /*height: 300px;*/
}
```

Usage: Second portlet region located within the content-container (see blue border in screen shot). Similar to regionA, this selector controls the width of the region as well as its location on the page.

```
#regionC {
/* inclusion of 3rd region - comment out for 2 region testing */
   padding: 0px;
   margin: 0px;
   width: 28%;
   float: left; /*hide 3rd region*/
   display: none;
}
```

Usage: Third portlet region located within the content-container (please refer to blue border in screen shot representing regionA and regionB for an example). Used for 3 column layout. Similar to regionA and regionB, this selector controls the width of the region as well as its location on the page.

Screenshot:


```
hr.cleaner {
clear:both;
height:1px;
margin: -1px 0 0 0;
padding:0;
border:none;
visibility: hidden;
}
```

Usage: Used to clear floats in regionA, regionB and regionC DIVs so that footer spans bottom of page.

```
#footer-container {
   padding: 10px;
   text-align: center;
   clear: both;
}
```

Usage: Footer region located towards the bottom of the content-container (see above screen shot). This region spans the entire width of the page, but can be adjusted (just like regionA, regionB and regionC) to take on a certain position and width/height in the layout.

- Portlet Container Window Selectors

```
.portlet-container {
  padding: 10px;
}
```

Usage: Wrapper that surrounds the portlet windows (see green border in screen shot). Currently, this selector is used to create space (padding) between the portlets displayed in each particular region.

```
.portlet-titlebar-title {
   color: #656565;
   font-family: Verdana, Arial, Helvetica, sans-serif;
   font-size: 12px;
   font-weight: bold;
   white-space: nowrap;
   line-height: 100%;
   float: left;
   text-indent: 5px;
   padding-top: 5px;
   padding-bottom: 6px;
}
```

Usage: Class used to style the title of each portlet window. Attributes of this selector set font properties, indentation and position of title.

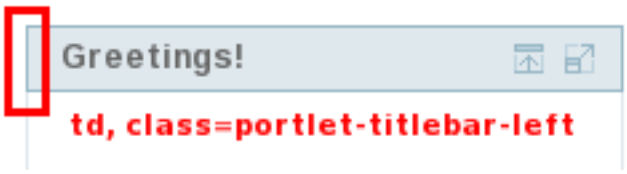
```
.portlet-mode-container {
   float: right;
   padding-top: 4px;
   white-space: nowrap;
}
```

Usage: Wrapper that contains the portlet window modes that display in the top right section of the portlet windows.

```
.portlet-titlebar-left {
   background-image: url( images/portlet-top-left.gif );
   background-repeat: no-repeat;
   width: 9px;
   height: 29px;
   min-width: 9px;
   background-position: bottom;
}
```

Usage: Used to style the top left corner of the portlet window. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the first column (TD) in the first row (TR).

Screenshot:




```
.portlet-titlebar-center {
   background-image: url( images/portlet-top-middle.gif );
   background-repeat: repeat-x;
   height: 29px;
   background-position: bottom;
}
```

Usage: Used to style the center section of the portlet title bar. Each portlet window consists of one table that has

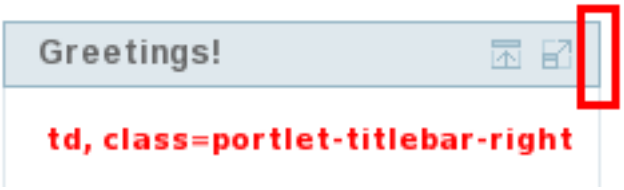
3 columns and 3 rows. This selector styles the second column (TD) in the first row (TR).

Screenshot:


```
.portlet-titlebar-right {
   background-image: url( images/portlet-top-right.gif );
   background-repeat: no-repeat;
   width: 10px;
   height: 30px;
   min-width: 10px;
   background-position: bottom left;
}
```

Usage: Used to style the top right corner of the portlet window. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the third column (TD) in the first row (TR).

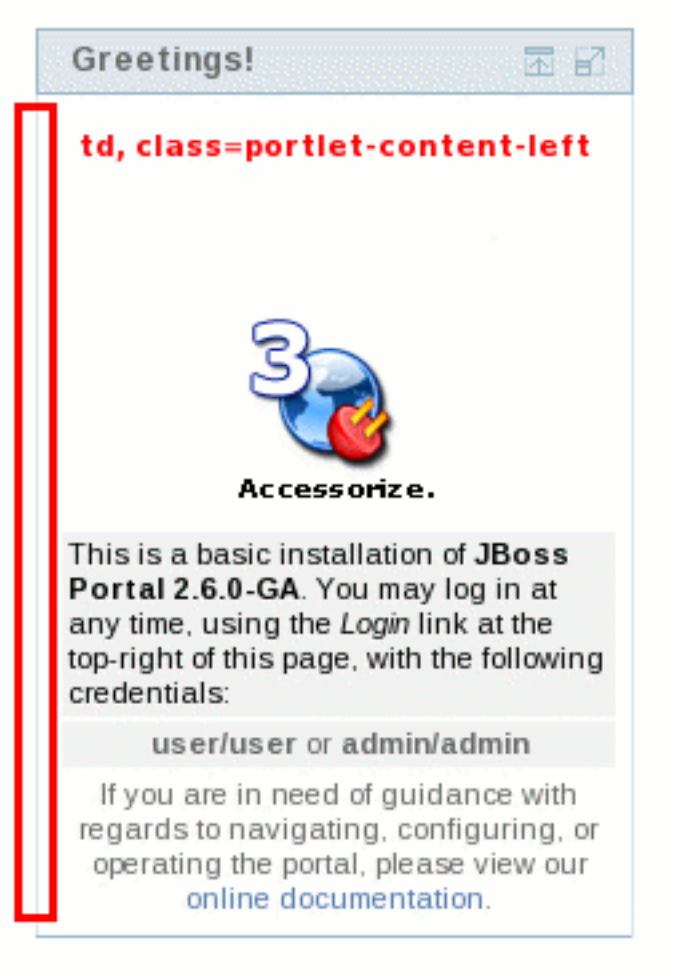
Screenshot:




```
.portlet-content-left {
   background-image: url( images/portlet-left-vertical.gif );
   background-repeat: repeat-y;
   width: 9px;
   min-width: 9px;
   /*
      width:20px;
      background-color:#FFFFFF;
      border-left: 1px solid #dfe8ed;
   */
}
```

Usage: Used to style the left hand vertical lines that make up the portlet window. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the first column (TD) in the second row (TR).

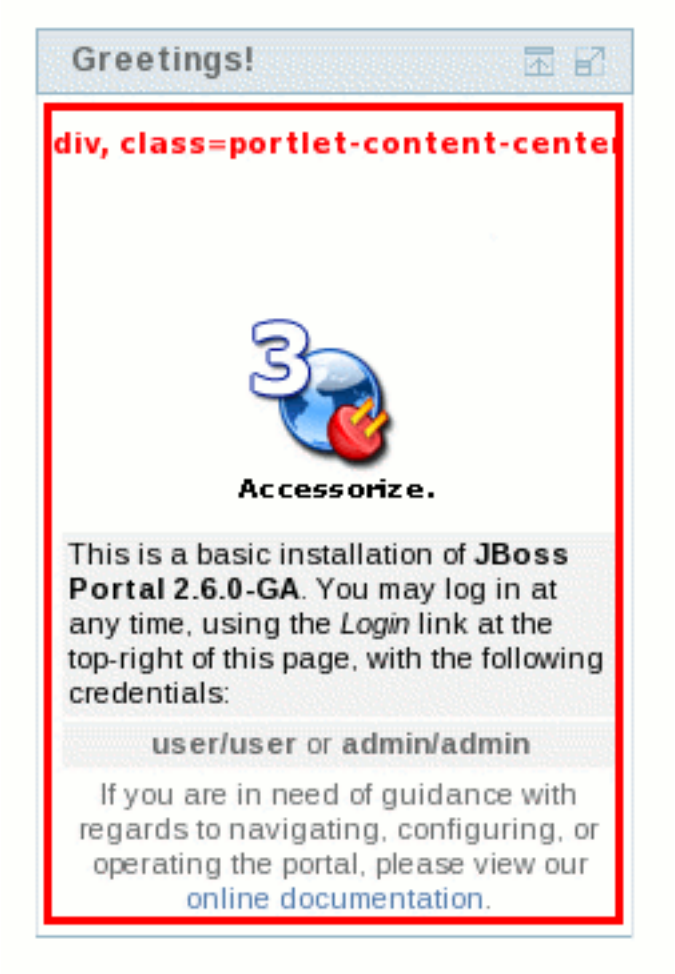
Screenshot:




```
.portlet-content-center {
   vertical-align: top;
   padding: 0;
   margin: 0;
}
```

Usage: Used to style the center, content area where the portlet content is injected into the portlet window (see below screen). Attributes for this selector control the positioning of the portlet content as well as the background and font properties. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the second column (TD) in the second row (TR).

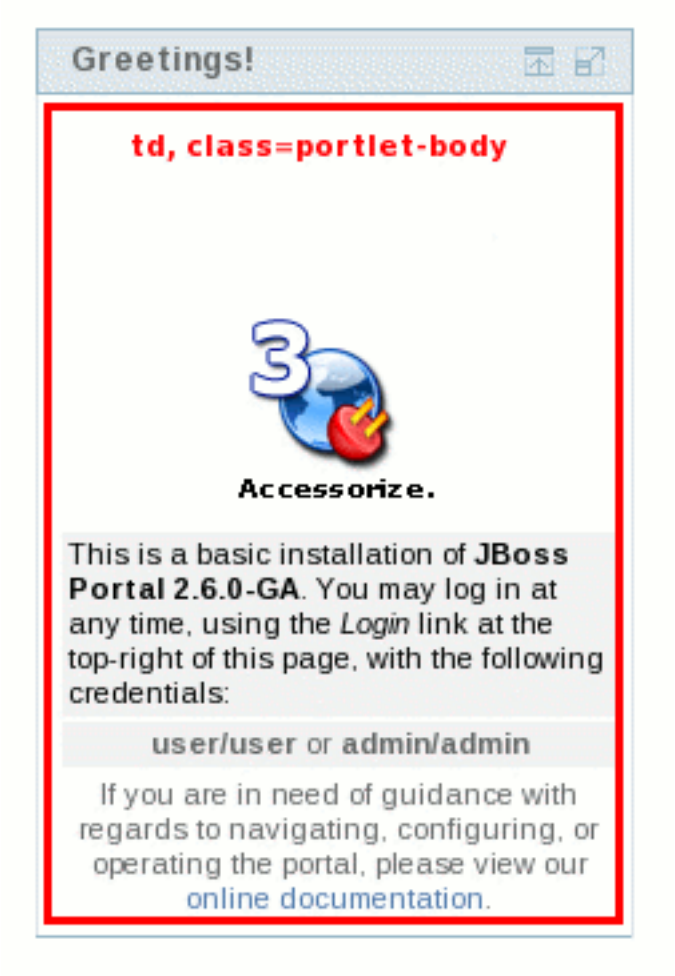
Screenshot:




```
.portlet-body {
   background-color: #FFFFFF;
   padding: 0;
   margin: 0;
}
```

Usage: An extra selector for controlling the content section of the portlet windows (see below screen). This was added to better deal with structuring the content that gets inserted/rendered in the portlet windows, specifically if the content is causing display problems in a portlet.

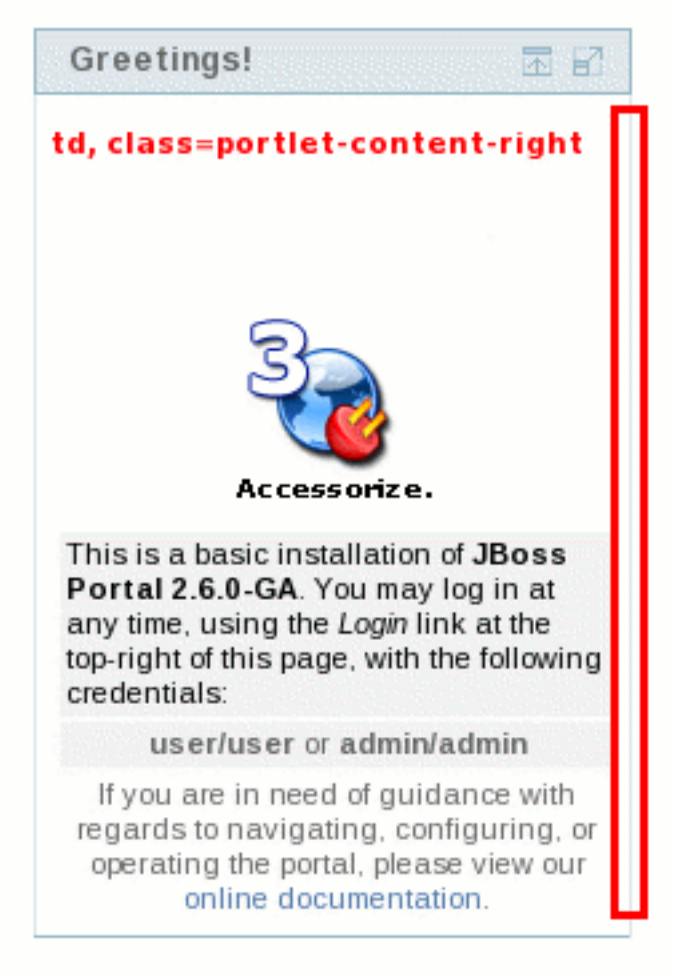
Screenshot:




```
.portlet-content-right {
   background-image: url( images/portlet-right-vertical.gif );
   height: 100%;
   background-repeat: repeat-y;
   background-position: left;
   width: 5px;
   min-width: 5px;
   padding: 0;
   margin: 0;
   /*
      width:5px;
      background-color:#FFFFFF;
      border-right: 1px solid #dfe8ed;
   */
}
```

Usage: Used to style the right hand vertical lines that make up the portlet window. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the third column (TD) in the second row (TR).

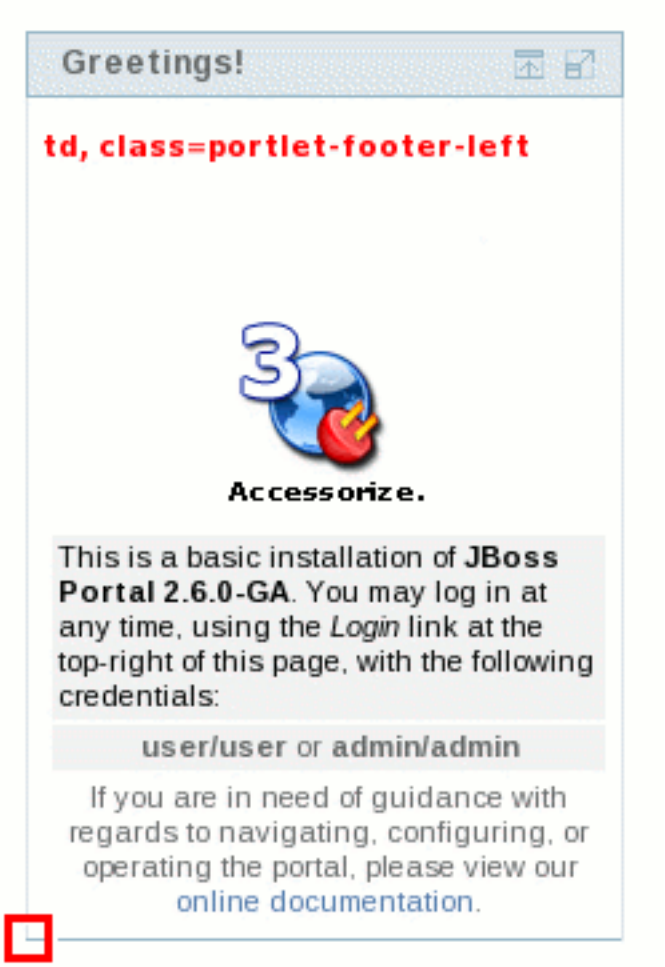
Screenshot:




```
.portlet-footer-left {
   background-image: url( images/portlet-bottom-left.gif );
   width: 9px;
   height: 4px;
   background-repeat: no-repeat;
   background-position: top right;
   min-width: 9px;
   padding: 0;
   margin: 0;
   /*
   background-color:#FFFFFF;
   border-bottom: 1px solid #98b7c6;
   border-left: 1px solid #dfe8ed;
   height:5px;
   */
}
```

Usage: Used to style the bottom left corner of the portlet window. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the first column (TD) in the third row (TR).

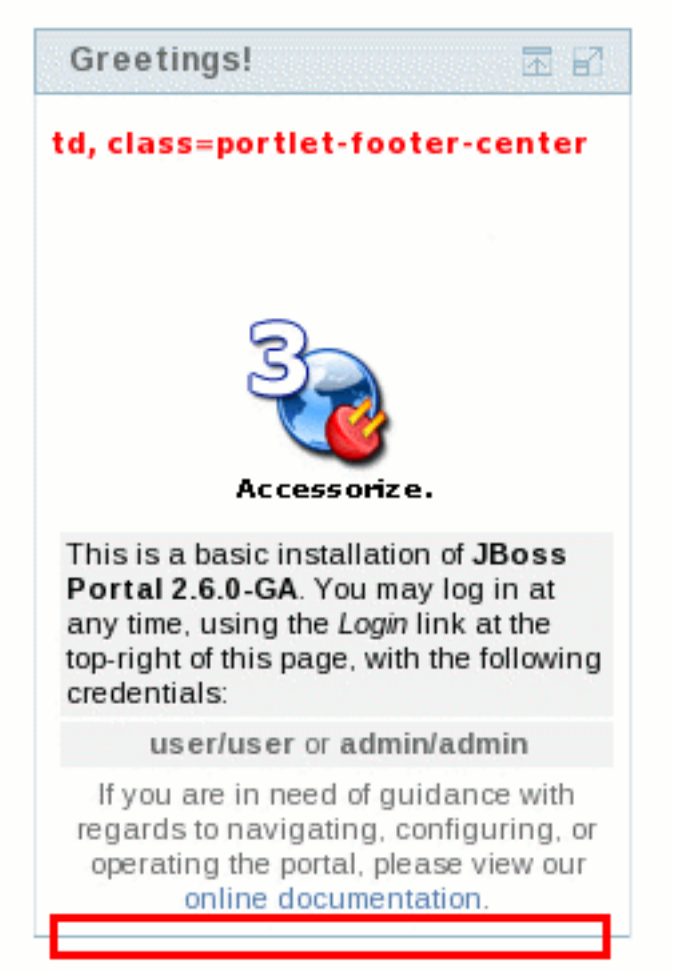
Screenshot:




```
.portlet-footer-center {
   background-image: url( images/portlet-bottom-middle.gif );
   height: 4px;
   background-repeat: repeat-x;
   /* background-color:#FFFFFF;
      border-bottom: 1px solid #98b7c6;
      height:5px;
   */
}
```

Usage: Used to style the bottom, center of the portlet window (i.e. the bottom horizontal line in the Industrial theme). Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the second column (TD) in the third row (TR).

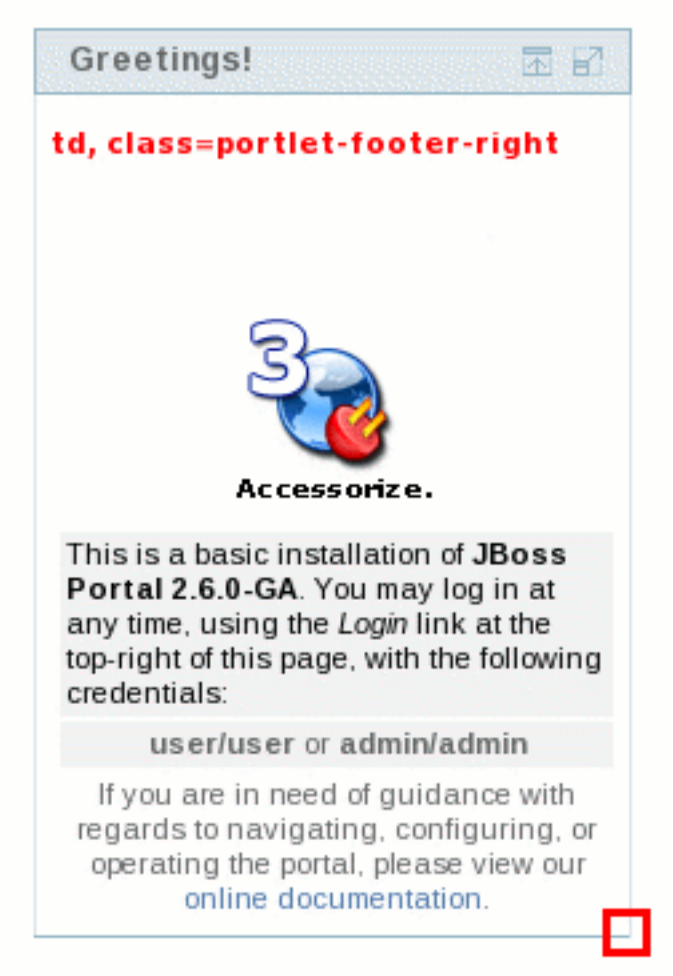
Screenshot:




```
.portlet-footer-right {
   background-image: url( images/portlet-bottom-right.gif );
   width: 5px;
   height: 4px;
   background-repeat: no-repeat;
   min-width: 5px;
   /*
      background-color:#FFFFFF;
      border-bottom: 1px solid #98b7c6;
      border-right: 1px solid #dfe8ed;
      height:5px;
   */
}
```

Usage: Used to style the bottom right corner of the portlet window. Each portlet window consists of one table that has 3 columns and 3 rows. This selector styles the third column (TD) in the third row (TR).

Screenshot:




- Portlet Window Mode Selectors

```
.portlet-mode-maximized {
   background-image: url( images/ico_16_maximize.gif );
   background-repeat: no-repeat;
   width: 16px;
   height: 16px;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Selector used to display the portlet maximize mode. Attributes for this selector control the display and dimensions of the maximize icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-minimized {
   background-image: url( images/ico_16_minimize.gif );
   background-repeat: no-repeat;
   width: 16px;
   height: 16px;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Selector used to display the portlet minimize mode. Attributes for this selector control the display and

dimensions of the minimize icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-normal {
   background-image: url( images/ico_16_normal.gif );
   width: 16px;
   height: 16px;
   background-repeat: no-repeat;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Selector used to display the portlet normal mode (i.e. the icon that when clicked, restores the portlet to the original, default view). Attributes for this selector control the display and dimensions of the normal icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-help {
   background-image: url( images/ico_16_help.gif );
   width: 16px;
   height: 16px;
   background-repeat: no-repeat;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Selector used to display the portlet help mode. Attributes for this selector control the display and dimensions of the help icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-edit {
   background-image: url( images/ico_edit.gif );
   background-repeat: no-repeat;
   width: 28px;
   height: 16px;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Selector used to display the portlet edit mode. Attributes for this selector control the display and dimensions of the edit icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-remove {
   background-image: url( images/ico_16_remove.gif );
   background-repeat: no-repeat;
   width: 16px;
   height: 16px;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Currently not available. But here is the intended use: Selector used to display the portlet remove mode. Attributes for this selector control the display and dimensions of the remove icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-view {
   background-image: url( images/ico_cancel.gif );
   background-repeat: no-repeat;
```

```
   width: 28px;
   height: 16px;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
   padding-right: 20px;
}
```

Usage: Selector used to display the portlet view mode. Attributes for this selector control the display and dimensions of the view icon, including the behavior of the mouse pointer when hovering the mode.

```
.portlet-mode-reload {
   background-image: url( images/ico_16_reload.gif );
   background-repeat: no-repeat;
   width: 16px;
   height: 16px;
   float: left;
   display: inline;
   cursor: pointer;
   padding-left: 3px;
}
```

Usage: Currently not available. But here is the intended use: Selector used to display the portlet reload mode. Attributes for this selector control the display and dimensions of the reload icon, including the behavior of the mouse pointer when hovering the mode.

- Copyright Selectors

```
.portal-copyright {
   font-family: Verdana, Arial, Helvetica, sans-serif;
   font-size: 10px;
   color: #5E6D7A;
}

a.portal-copyright {
   color: #768591;
   text-decoration: none;
}

a.portal-copyright:hover {
   color: #bcbcbc;
   text-decoration: underline;
}
```

Usage: The above three selectors are used to style copyright content in the portal. The portal-copyright selector sets the font properties (color, etc.), and the a.portal-copyright/a.portal-copyright:hover selectors style any links that are part of the copyright information.

- Table Selectors

```
.portlet-table-header {
   background-color: #eef;
   padding: 0 5px 5px 5px;
   font-weight: bold;
   color: #656565;
   font-size: 12px;
   border-bottom: 1px solid #d5d5d5;
}
```

Usage: Intended for styling tables (specifically, the TH or table header elements) that get rendered within a

portlet window.

```
.portlet-table-body {

}
```

Usage: Intended for styling the table body element used to group rows in a table.

```
.portlet-table-alternate {
   background-color: #E6E8E5;
   border-bottom: 1px solid #d5d5d5;
}
```

Usage: Used to style the background color (and possibly other attributes) for every other row within a table.

```
.portlet-table-selected {
   color: #000;
   font-size: 12px;
   background-color: #CBD4E6;
}
```

Usage: Used to style text, color, etc. in a selected cell range.

```
.portlet-table-subheader {
   font-weight: bold;
   color: #000;
   font-size: 12px;
}
```

Usage: Used to style a subheading within a table that gets rendered in a portlet.

```
.portlet-table-footer {
   padding: 5px 5px 0 5px;
   font-weight: bold;
   color: #656565;
   font-size: 12px;
   border: none;
   border-top: 1px solid #d5d5d5;
}
```

Usage: Similar to portlet-table-header and portlet-table-body, this selector is used to style the table footer element which is used to group the footer row in a table.

```
.portlet-table-text {
   padding: 3px 5px;
   border-bottom: 1px solid #d5d5d5;
}
```

Usage: Text that belongs to the table but does not fall in one of the other categories (e.g. explanatory or help text that is associated with the table). This selector can also be modified to provide styled text that can be used in all tables that are rendered within a portlet.

- FONT Selectors

```
.portlet-font {
   color: #000000;
   font-family: Verdana, Arial, Helvetica, sans-serif;
   font-size: 11px;
}
```

Usage: Used to style the font properties on text used in a portlet. Typically this class is used for the display of non-accentuated information.

```
.portlet-font-dim {
   color: #777777;
   font-family: Verdana, Arial, Helvetica, sans-serif;
   font-size: 11px;
}
```

Usage: A lighter version (color-wise) of the portlet-font selector.

- FORM Selectors

```
.portlet-form-label {
   font-size: 10px;
   color: #656565;
}
```

Usage: Text used for the descriptive label of an entire form (not the label for each actual form field).

```
.portlet-form-button {
   font-size: 10px;
   font-weight: bold;
   color: #FFFFFF;
   background-color: #5078aa;
   border-top: 1px solid #97B7C6;
   border-left: 1px solid #97B7C6;
   border-bottom: 1px solid #254869;
   border-right: 1px solid #254869;
}
```

Usage: Used to style portlet form buttons (e.g. Submit).

```
.portlet-icon-label {

}
```

Usage: Text that appears beside a context dependent action icon.

```
.portlet-dlg-icon-label {

}
```

Usage: Text that appears beside a "standard" icon (e.g Ok, or Cancel).

```
.portlet-form-field-label {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 10px;
   color: #000;
   vertical-align: bottom;
   white-space: nowrap
}
```

Usage: Selector used to style portlet form field labels.

```
.portlet-form-field {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 10px;
   color: #000; /*margin-top: 10px;*/
}
```

Usage: Selector used to style portlet form fields (i.e. INPUT controls, SELECT elements, etc.).

- LINK Selectors

```
.portal-links:link {
```

```
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 11px;
   font-weight: bold;
   color: #242424;
   text-decoration: none;
}

.portal-links:hover {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 11px;
   font-weight: bold;
   color: #5699B7;
   text-decoration: none;
}

.portal-links:active {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 11px;
   font-weight: bold;
   color: #242424;
   text-decoration: none;
}

.portal-links:visited {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 11px;
   font-weight: bold;
   color: #242424;
   text-decoration: none;
}
```

Usage: The above four selectors are used to style links in the portal. Each pseudo class (i.e. hover, active, etc.) provides a different link style.

- MESSAGE Selectors

```
.portlet-msg-status {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 12px;
   font-style: normal;
   color: #336699;
}
```

Usage: Selector used to signify the status of a current operation that takes place in the portlet (e.g. "saving results", "step 1 of 4").

```
.portlet-msg-info {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 12px;
   font-style: italic;
   color: #000;
}
```

Usage: Selector used to signify general information in a portlet (e.g. help messages).

```
.portlet-msg-error {
   color: red;
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 12px;
   font-weight: bold;
}
```

Usage: Selector used to signify an error message in the portlet (e.g. form validation error).

```
.portlet-msg-alert {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 12px;
   font-weight: bold;
   color: #821717;
}
```

Usage: Selector used to style an alert that is displayed to the user.

```
.portlet-msg-success {
   font-family: Verdana, Arial, Helvetica, Sans-Serif, sans-serif;
   font-size: 12px;
   font-weight: bold;
   color: #359630;
}
```

Usage: Selector used to indicate successful completion of an action in a portlet (e.g. "save successful").

- SECTION Selectors

```
.portlet-section-header {
   font-weight: bold;
   color: #656565;
   font-size: 12px;
}
```

Usage: Table or section header.

```
.portlet-section-body {
   color: #656565;
}
```

Usage: Normal text in a table cell.

```
.portlet-section-alternate {
   background-color: #F2F2F2;
}
```

Usage: Used to style background color and text in every other table row.

```
.portlet-section-selected {
   background-color: #CBD4E6;
}
```

Usage: Used to style background and font properties in a selected cell range.

```
.portlet-section-subheader {
   font-weight: bold;
   font-size: 10px;
}
```

Usage: Used to style a subheading within a table/section that gets rendered in a portlet.

```
.portlet-section-footer {
   font-size: 11px;
}
```

Usage: Used to style footer area of a section/table that gets rendered in a portlet.

```
.portlet-section-text {
   font-size: 12px;
   font-style: italic;
}
```

Usage: Text that belongs to a section but does not fall in one of the other categories. This selector can also be modified to provide styled text that can be used in all sections that are rendered within a portlet.

- MENU Selectors

```
.portlet-menu {}
```

Usage: General menu settings such as background color, margins, etc.

```
.portlet-menu-item {
   color: #242424;
   text-decoration: none;
   font-family: Verdana, Arial, Helvetica, sans-serif;
   font-size: 12px;
}
```

Usage: Normal, unselected menu item.

```
.portlet-menu-item:hover {
   color: #5699B7;
   text-decoration: none;
   font-family: Verdana, Arial, Helvetica, sans-serif;
   font-size: 12px;
}
```

Usage: Used to style hover effect on a normal, unselected menu item.

```
.portlet-menu-item-selected {}
```

Usage: Applies to selected menu items.

```
.portlet-menu-item-selected:hover {}
```

Usage: Selector styles the hover effect on a selected menu item.

```
.portlet-menu-cascade-item {}
```

Usage: Normal, unselected menu item that has sub-menus.

```
.portlet-menu-cascade-item-selected {}
```

Usage: Selected sub-menu item.

```
.portlet-menu-description {}
```

Usage: Descriptive text for the menu (e.g. in a help context below the menu).

```
.portlet-menu-caption {}
```

Usage: Selector used to style menu captions.

- WSRP Selectors

```
.portlet-horizontal-separator {}
```

Usage: A separator bar similar to a horizontal rule, but with styling matching the page.

```
.portlet-nestedTitle-bar {}
```

Usage: Allows portlets to mimic the title bar when nesting something.

```
.portlet-nestedTitle {}
```

Usage: Allows portlets to match the textual character of the title on the title bar.

```
.portlet-tab {}
```

Usage: Support portlets having tabs in the same style as the page or other portlets.

```
.portlet-tab-active {}
```

Usage: Highlight the tab currently being shown.

```
.portlet-tab-selected {}
```

Usage: Highlight the selected tab (not yet active).

```
.portlet-tab-disabled {}
```

Usage: A tab which can not be currently activated.

```
.portlet-tab-area {}
```

Usage: Top level style for the content of a tab.

## 21.8. Additional Ajax selectors

Since 2.6 JBoss Portal has ajax features. Those features introduce a couple of CSS selectors that enables further customization of the visual look and feel. Indeed by default those CSS styles are provided by ajaxified layouts but it may not fit with some themes. It is possible to redefine them in the stylesheet of the themes.

-

```
.dyna-region {}
```

Usage: Denotes a dynamic region which can be subject to ajax capabilities.

- 
```
.dyna-window {}
```

Usage: Denotes a dynamic window which can be subject to ajax capabilities.

- 
```
.dyna-decoration {}
```

Usage: Denotes a dynamic decorator which can be subject to ajax capabilities.

- 
```
.dyna-portlet {}
```

Usage: Denotes a dynamic content which can be subject to ajax capabilities.

- 
```
.dnd-handle {
   cursor: move;
}
```

Usage: Denotes the handle offered by draggable windows. By default it changes the mouse shape to indicate to the user that his mouse is hovering a draggable window.

- 
```
.dnd-droppable {
   border: red 1px dashed;
   background-color: Transparent;
}
```

Usage: Denotes a zone where a user can drop a window during drag and drop operations. This selector is added and removed dynamically at runtime by the ajax framework and is not present in the generated markup.

# 22

# Ajax

**Julien Viet** `<julien.viet@jboss.com>`

This section covers the ajax features provided by the portal.

## 22.1. Introduction

Todo

## 22.2. Ajaxified markup

### 22.2.1. Ajaxified layouts

Part of the Ajax capabilities are implemented in the layout framework which provide the structure for generating portal pages. The good news is that the existing layout only requires a few modifications in order to be ajaxified.

We will use as example an simplified version of the layout JSP provided in JBoss Portal 2.6 and outline what are the required changes that makes it an ajaxified layout:

```
<%@ taglib uri="/WEB-INF/theme/portal-layout.tld" prefix="p" %>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
   <meta http-equiv="Content-Type" content="text/html;"/>
   <!-- inject the theme, default to the Renaissance theme if
        nothing is selected for the portal or the page -->
   <p:theme themeName="renaissance"/>
   <!-- insert header content that was possibly set by portlets on the page -->
   <p:headerContent/>
</head>

<body id="body">
<p:region regionName='AJAXScripts' regionID='AJAXScripts'/>
<div id="portal-container">
   <div id="sizer">
      <div id="expander">
         <div id="logoName"></div>
         <table border="0" cellpadding="0" cellspacing="0" id="header-container">
            <tr>
               <td align="center" valign="top" id="header">

                  <!-- Utility controls -->
                  <p:region regionName='dashboardnav' regionID='dashboardnav'/>
```

```
                <!-- navigation tabs and such -->
                <p:region regionName='navigation' regionID='navigation'/>
                <div id="spacer"></div>
             </td>
          </tr>
       </table>
       <div id="content-container">
          <!-- insert the content of the 'left' region of the page,
               and assign the css selector id 'regionA' -->
          <p:region regionName='left' regionID='regionA'/>
          <!-- insert the content of the 'center' region of the page,
               and assign the css selector id 'regionB' -->
          <p:region regionName='center' regionID='regionB'/>
          <hr class="cleaner"/>
       </div>
    </div>
 </div>
</div>

<p:region regionName='AJAXFooter' regionID='AJAXFooter'/>

</body>
</html>
```

- <p:theme themeName="renaissance"/> should be already present as it exists since 2.4 but is even more necessary as it will inject in the page the reference to the ajax stylesheet.
- <p:region regionName='AJAXScripts' regionID='AJAXScripts'/> should be added before any other region in the markup of the layout.
- <p:region regionName='AJAXFooter' regionID='AJAXFooter'/> should be added after any other region in the markup of the layout.

### 22.2.2. Ajaxified renderers

At runtime the portal combines the layout and the renderers in order create the markup returned to the web browser. The most used render set is the divRenderer. Renderers only need a modification in the deployment descriptor to indicate that they support ajax. Here is the declaration of the default divRenderer now in 2.6:

```
<renderSet name="divRenderer">
   <set content-type="text/html">
      <ajax-enabled>true</ajax-enabled>
      <region-renderer>org.jboss.portal.theme.impl.render.div.DivRegionRenderer
      </region-renderer>
      <window-renderer>org.jboss.portal.theme.impl.render.div.DivWindowRenderer
      </window-renderer>
      <portlet-renderer>org.jboss.portal.theme.impl.render.div.DivPortletRenderer
      </portlet-renderer>
      <decoration-renderer>org.jboss.portal.theme.impl.render.div.DivDecorationRenderer
      </decoration-renderer>
   </set>
</renderSet>
```

You should notice the <ajax-enabled>true</ajax-enabled> which indicates that the render set supports ajaxification.

## 22.3. Ajaxified pages

The ajaxification of the portal pages can be configured in a fine grained manner. Thanks to the portal object properties it is possible to control which pages support ajax and which page do not support ajax. The administrator must pay attention to the fact that property values are inherited in the object hierarchy.

### 22.3.1. Drag and Drop

That feature is only effective in dashboards as it requires the offer personalization of the page layout per user. By default the feature is enabled thanks to a property set on the dashboard object. It is possible to turn off that property if the administrator does not want to expose that feature to its user.

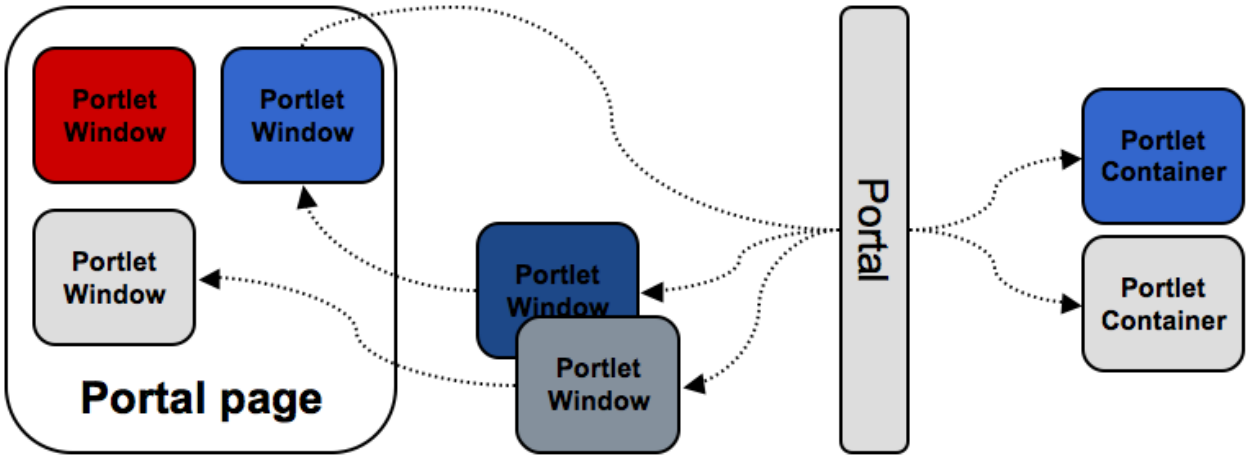
In the file *jboss-portal.sar/conf/data/default-object.xml* is declared and configured the creation of the dashboard portal:

```
<deployment>
   <parent-ref/>
   <if-exists>keep</if-exists>
   <context>
      <context-name>dashboard</context-name>
      <properties>
         ...
         <property>
            <name>theme.dyna.dnd_enabled</name>
            <value>true</value>
         </property>
         ...
      </properties>
      ...
   </context>
</deployment>
```

The property *theme.dyna.dnd_enabled* is set to the value *true* which means that the dashboard object will provide the drag and drop feature.

### 22.3.2. Partial refresh

Partial refresh is a very powerful feature which allows the portal to optimize the refreshing of portlets on a page. When one portlet is invoked, instead of redrawing the full page, the portal is able to detect which portlets needs to be refreshed and will update only these portlets.




The portal providing partial refresh

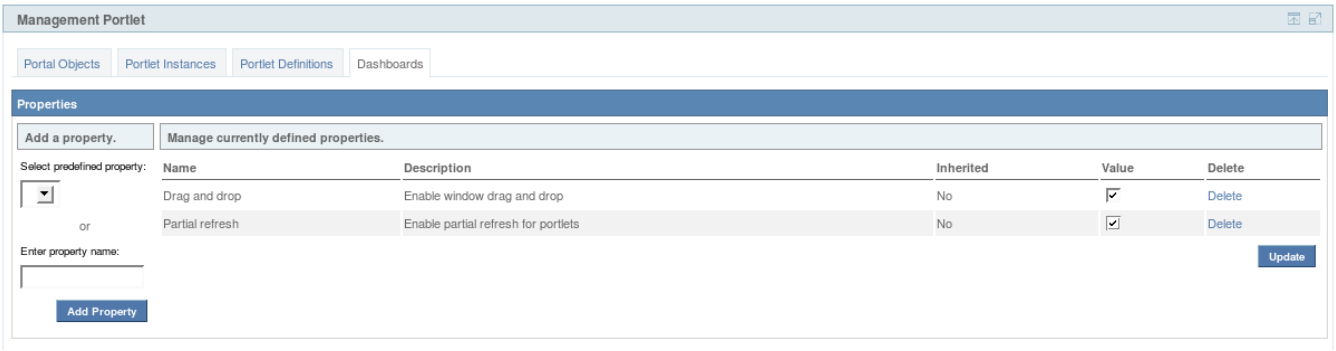
#### 22.3.2.1. Portal objects configuration

Like with the drag and drop feature, partial page refresh is controlled via properties on portal objects. The name of the property is *theme.dyna.partial_refresh_enabled* and its values can be *true* or *false*. When this property is set on an object it is automatically inherited by the sub hierarchy located under that object. By default the drag and drop feature is positionned on the dashboard object and not on the rest of the portal objects.

```
<deployment>
   <parent-ref/>
   <if-exists>keep</if-exists>
   <context>
      <context-name>dashboard</context-name>
      <properties>
         ...
         <property>
            <name>theme.dyna.partial_refresh_enabled</name>
            <value>true</value>
         </property>
         ...
      </properties>
      ...
   </context>
</deployment>
```

> **Note**
>
> The partial page refresh feature is compatible with the Portal API. The Portal API allows programmatic update of the state of portlets at runtime. For instance it is possible to modify the window state or the mode of several portlets on a given page. When such event occurs, the portal detects the changes which occured and will update the portlet fragments in the page.

It is possible to change that behavior at runtime using the property editor of the management portlet. If you want to enable partial refreshing on the default portal you should set the property to true directly on the portal and all the pages in that portal will automatically inherit those properties.




The default portal configured for partial page refresh

### 22.3.2.2. Portlet configuration

By default any portlet will support partial refreshing. When does the portal performs partial page refreshing ? By default it is enabled for action and render links with the following exceptions. In those situations, the portal will prefer to perform a full page refresh:

- Form GET are not handled, however it should not be an issue as this situation is discouraged by the Portlet specification. It however taken in account, just in case of. Here is an example of a Java Server Page that would do one:

```
<form action="<%= renderResponse.createActionURL() %>" method="get">
   ...
</form>
```

- Form uploads are not handled.
- Having an interaction that deals with the *MAXIMIZED* window state. When a window is entering a maximized state or leaving a maximized window state, the portal will perform a full page refresh.

It can happen that a portlet does not want to support partial refreshing, in those situations the *jboss-portlet.xml* can be used to control that behavior. Since 2.6 an ajax section has been added in order to configure ajax features related to the portlet.

```
<portlet>
   <portlet-name>MyPortletNoAjax</portlet-name>
   <ajax>
      <partial-refresh>false</partial-refresh>
   </ajax>
</portlet>
```

The usage of the *partial-refresh* set to the value false means that the portlet will not be subject of a partial page refresh when it is invoked. However the portlet markup can still be subject to a partial rendering.

### 22.3.2.3. Limitations

Partial refreshing of portlets has limitations both on the server side (portal) and on the client side (browser).

## 22.3.2.3.1. Application scoped session attributes

When partial refresh is activated, the state of a page can potentially become inconsistent. for example, if some objects are shared in the application scope of the session between portlets. When one portlet update a session object, the other portlet won't be refreshed and will still display content based on the previous value of the object in the session. To avoid that, partial refresh can be desactivated for certain portlets by adding <portlet-refresh>false<portlet-refresh> in the jboss-portlet.xml file.

### 22.3.2.3.2. Non ajax interactions

The solution developped by JBoss Portal on the client side is built on top of DOM events emitted by the web browser when the user interracts with the page. If an interaction is done without an emission of an event then JBoss Portal will not be able to transform it into a partial refresh and it will result instead of a full refresh. This can happen with programmatic submission of forms.

```
<form id="<%= formId %>" action="<%= renderResponse.createActionURL() %>" method="post">
   ...
   <select onclick="document.getElementById('<%= formId %>').submit()">
   ...
   </select>
   ...
</form>
```

# 23

# Troubleshooting and FAQ

**Roy Russo** <roy@jboss.org>

## 23.1. Troubleshooting and FAQ

**Installation / Configuration**

- I am seeing "ERROR [JDBCExceptionReporter] Table not found in statement" in the logfile on first boot. What is this?
- I want to do a clean install/upgrade over my existing one. What are the steps?
- Is my database vendor/version combination supported?
- How do I force the Hibernate Dialect used for my database?
- How do I change the context-root of the portal to http://localhost:8080/?

**CMS**

- How do I change the CMS repository configuration?
- On reboot, the CMS is complaining about a locked repository.
- I created a file in the CMSAdmin. How do I view it?

**Errors**

- When I access a specific portal-instance or page, I keep seeing "401 - not authorized" error in my browser.
- How do I disable development-mode errors on the presentation layer?

**Miscellaneous**

- Is there a sample portlet I can look at to learn about portlet development and JBoss Portal deployments?

**I am seeing "ERROR [JDBCExceptionReporter] Table not found in statement" in the logfile on first boot. What is this?**

Ignore this error. It is used by the portal to create the initial database tables. On second boot, you should not see them at all.

**I want to do a clean install/upgrade over my existing one. What are the steps?**

- Shut down JBoss AS
- Delete JBOSS_HOME/server/default/data/portal
- Delete all JBoss Portal tables from your database
- Start JBoss AS.

**Is my database vendor/version combination supported?**

See Section 1.4

**How do I force the Hibernate Dialect used for my database?**

See Section 3.3

**How do I change the context-root of the portal to http://localhost:8080/?**

See Section 3.2

**How do I change the CMS repository configuration?**

There are 3 supported modes: 100% DB (default), 100% Filsystem, and Mixed (Blobs on the Filesystem and metadata in the DB). You can see configuration options here: Section 18.4.3

**On reboot, the CMS is complaining about a locked repository.**

This occurs when JBoss AS is improperly shutdown or the CMS Service errors on startup. To remove the lock, shutdown JBoss, and then remove the file under JBOSS_HOME/server/default/data/portal/cms/conf/.lock.

**I created a file in the CMSAdmin. How do I view it?**

Using the default configuration, the path to the file in the browser would be: http://localhost:8080/portal/content/path/to/file.ext. Note that all requests for cms content must be prepended with /content and then followed by the path/to/the/file.gif as it is in your directory structure.

**When I access a specific portal-instance or page, I keep seeing "401 - not authorized" error in my browser.**

You are likely not authorized to view the page or portal instance. You can either modify the security using the Management Portlet under the Admin Tab, or secure your portlets via the object descriptor, Section 13.1

**How do I disable development-mode errors on the presentation layer?**

See: Section 6.3.2

**Is there a sample portlet I can look at to learn about portlet development and JBoss Portal deployments?**

- Sample portlets with tutorials can be found here, Section 5.2
- Additional Portlets can be found at PortletSwap.com [1] .

[1] http://www.portletswap.com