JBoss Portlet Container

User Guide

Release 2.0

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Introduction

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1.1. Motivation

JBoss Portlet Container is the next generation portlet container on which future versions of JBoss Portal, and the JBoss Portal platform will be based. It provides a standard-compliant implementation of the JSR-286 Portlet 2.0 specification. It has been developed with reusability in mind so that advanced users, who don't require a full-fledged portal, can leverage the portlet management services it provides in their own applications. JBoss Portlet Container is available through the business-friendly LGPL open source license.

1.2. Audience

JBoss Portlet Container is targeted at developers and advanced users who want to be able to deploy portlet-based applications but don't need a full-fledged portal.

1.3. Simple Portal: showcasing JBoss Portlet Container

A simple portal has been built on top of the base portlet container. A JSP taglib is also provided to make it easy to display portlet content in JSP pages. We also provide samples of portlets implementing some of the advanced capabilities of JSR-286.

1.4. Resources

- *Project website* [http://labs.jboss.com/portletcontainer/]
- *Project Wiki* [http://labs.jboss.com/wiki/JBPC_Home]

Installation

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2.1. Downloading and installing

Two bundled versions are provided to showcase Gatein Portlet Container in action with minimum effort. Theses bundles each include a servlet container configured with the Simple Portal demonstration portal along with some JSR-286 compliant portlets. You will need to have Java 5 configured on your machine to run the demonstration portal. You can download Java 5 at *http://java.sun.com/javase/downloads/index_jdk5.jsp* [http://java.sun.com/javase/downloads/index_jdk5.jsp]. Once you have Java installed, you are ready to download one of GateIn Portlet Container bundles. The following link has the list of downloads for Gatein Portlet Container: *http://labs.jboss.com/portal/portletcontainer/download* [http://www.jboss.org/gatein/portletcontainer/download]. Two bundles are currently provided: one with Tomcat 6.0 one with JBoss Application Server 4.2 and one with JBoss Application Server 5.1.

2.1.1. JBoss AS 4.2.x bundle

Of note in the bundle are the following directories:

- **bin** - Contains the startup/shutdown commands for JBoss Application Server
- **docs** - Contains documentation for JBoss Application Server
- **gateinpc-docs** - Contains documentation for GateIn Portlet Container (this document included)
- **server** - Contains JBoss Application Server configuration and the `simple-portal.war` file along with several sample portlets in the `deploy` directory of the *default* configuration

To start the demonstration portal, go to the `bin` directory and execute either `run.sh` or `run.bat` (depending on your platform).

2.1.2. Tomcat 6.0.x bundle

Of note in the bundle are the following directories:

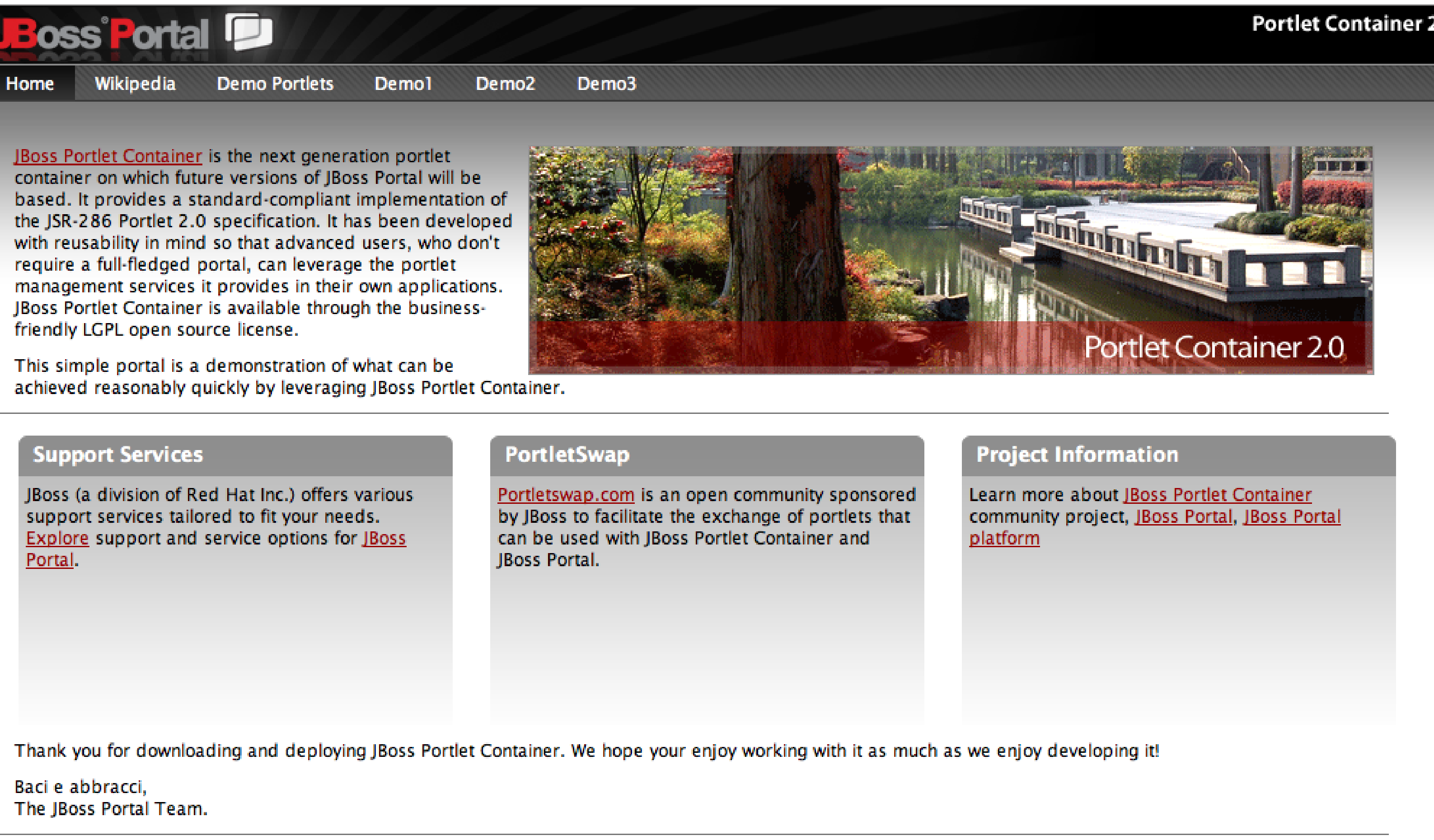
- **bin** - Contains the startup/shutdown commands for Tomcat
- **logs** - Contains the logs once the servlet container is started (the most interesting one being one with *locahost* in its name)
- **gateinpc-docs** - Contains documentation for GateIn Portlet Container (this document included)

- **lib** - Contains Tomcat libraries to which several support libraries for GateIn Portlet Container have been added
- **webapps** - Contains Tomcat default applications and the `simple-portal.war` file along with several sample portlets

To start the demonstration portal, go to the `bin` directory and execute either `startup.sh` or `startup.bat` (depending on your platform).

2.2. Testing Portal Container's demonstration portal

Once the servlet container is started, bring up your web browser and go to the following URL: *http://localhost:8080/simple-portal*. You should see the default page for Portlet Container's demonstration portal:



JBoss Portlet Container is the next generation portlet container on which future versions of JBoss Portal will be based. It provides a standard-compliant implementation of the JSR-286 Portlet 2.0 specification. It has been developed with reusability in mind so that advanced users, who don't require a full-fledged portal, can leverage the portlet management services it provides in their own applications. JBoss Portlet Container is available through the business-friendly LGPL open source license.

This simple portal is a demonstration of what can be achieved reasonably quickly by leveraging JBoss Portlet Container.

Support Services

JBoss (a division of Red Hat 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 to facilitate the exchange of portlets that can be used with JBoss Portlet Container and JBoss Portal.

Project Information

Learn more about JBoss Portlet Container community project, JBoss Portal, JBoss Portal platform

Thank you for downloading and deploying JBoss Portlet Container. We hope your enjoy working with it as much as we enjoy developing it!

Baci e abbracci,
The JBoss Portal Team.

Default page for Portlet Container's demonstration portal.

Simple Portal

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3.1. Motivation

A spin-off of the JBoss Portlet Container product is a portal called*Simple Portal*. As its name implies, Simple Portal provides an easy to use portal for small-sized sites that only require aggregation of portlets in portal pages, without the extra features of a full-fledged portal. In particular the following features are not addressed by Simple Portal:

Security	Simple Portal relies on the servlet container authentication and does not provide any kind of security enforcement
Dynamic page creation	Simple Portal relies on JSP pages to create portal pages
Identity integration	Integration with identity systems is not provided, in particular access to the user's identity and profile

On the other hand, Simple Portal is much simpler than a traditionnal portal server because it just consist in a few modules that only handles the basic protal concerns: the aggregation of portlet components in a web page.

The targeted use for Simple Portal are therefore restricted to:

- Portlet development
- Static portals build on top of the JSR286 specification

3.2. Development

3.2.1. Portlet deployment

Simple Portal integrates with a few web containers in order to provide handling of portlet deployment and runtime. This feature leverages JBoss Portal's Web Service Provider Interface (SPI). In particular, JBoss Portlet Container uses the Web SPI in order to transparently react to the life cycle of WAR files that contains portlet components as they are deployed or undeployed on the target servlet container. The SPI defines two levels of integrations.

SPI implementation level 1 works with any web container but relies on portlet developers to insert a specific servlet in the `web.xml` descriptor of their portlet applications.

SPI implementation level 2 is based on more advanced integration with specific web containers and provides transparent deployment of portlet applications without requiring any proprietary modification of the war file, keeping your application vendor agnostic. A few containers are supported:

- Tomcat 6.0.x
- JBoss Application Server 4.2.x

3.2.2. Simple Portal tag library

Simple Portal relies on the JSP technology to build pages for several good reasons:

- JSPs provide an adequate technology for building portal pages. This does not mean that portlet applications are required to use JSP, just that Simple Portal uses JSPs to organize portlets as pages. Portlets themselves are independent of the technology used for pages and can be developed using whichever technology or web framework you prefer/require.
- Java web developers are familiar with JSP technology.
- JSP makes it is easy and straightforward to create portal pages without requiring advanced tooling and, in most instances, can leverage IDEs support for JSPs.
- Several web frameworks are compatible with JSP and it is possible to leverage them. For example, it is possible to use Sitemesh for application skinning and still leverage Simple Portal's JSP tag library.

<page>If you need more advanced page creation capabilities, you should consider using a more advanced portal product such as JBoss Portal. </page>

3.2.2.1. Page creation

Any JSP page can contain portlets, the only requirement to make this possible is to have the page located in Simple Portal's WAR file and to use the portal tag library.

Let's look at a minimal portal page using the portal tag library:

Example 3.1. Minimal portal page

```
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<%@ taglib uri="/WEB-INF/portal.tld" prefix="portal" %>
<?xml version="1.0" encoding="UTF-8"?>
<!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" xml:lang="en" lang="en">
  <head>
    <title>Simple portal page</title>
  </head>
  <body>
    <portal:page>
       <portal:portlet name="JSPPortlet" applicationName="samples-jsp-portlet">
          <portal:portletmarkup/>
       </portal:portlet>
    </portal:page>
  </body>
</html>
```

The portal tag library declaration enables the JSP compiler to know about the existence of the simple portal. It is declared by the JSP declaration `<%@ taglib uri="/WEB-INF/portal.tld" prefix="portal" %>` and it binds the portal tag library to the portal namespace.

The interesting part of the markup is the `portal:page` element and its children. The `page` tag defines a logical scope that is used by Simple Portal to generate markup:

- It defines a container for a set of portlets.
- It defines the page area that will be replaced entirely by a maximized portlet markup (when the maximized window state is requested).
- It defines a scope for the coordination features.

Currently, only one portal page can be specified per JSP file but this should be extended to several portal pages per JSP file in future versions of JBoss Portlet Container.

Access to portlet information within a portal page is done by defining a reference to the portlet using the `portlet` tag. The mandatory attributes for this tag are `name` and `applicationName` that are used to locate the deployed portlet. The `applicationName` refers to the name of the WAR file containing your portlet application without the extension `.war` and the `name` attribute refers to the portlet name as declared by the `portlet-name` element in the `portlet.xml` file of your portlet application WAR file. Similarly to the `page` tag, the `portlet` tag does not produce any markup but rather makes your portlet available to Simple Portal.

The portlet markup is output using the `portletmarkup` tag. This tag is replaced by the referenced portlet markup (without any decoration) when the page is rendered.

3.2.2.2. Portlet title

The previous example only output the portlet markup. Let's examine how to output a complete portlet representation. The portlettitle tag is used to insert the render phase generated title of the portlet referenced by the enclosing `portlet` element:

Example 3.2. Portlet title

```
<portal:portlet name="JSPPortlet" applicationName="samples-jsp-portlet">
   ...
   <portal:portlettitle/>
   ...
</portal:portlet>
```

3.2.2.3. Portlet urls

It is also possible to output URLs targeting a given portlet. This can be used to create controls to change the mode or window state of the portlet. The `portleturl` tag outputs such URLs and insert them in the page.

Example 3.3. Portlet URL

```
<portal:portlet name="JSPPortlet" applicationName="samples-jsp-portlet">
   ...
   <portal:portleturl windowState="maximized" mode="edit"/>
   ...
</portal:portlet>
```

The `portleturl` tag has two optional attributes. The `windowState` attribute allows to change the window state of the associated portlet while the `mode` attribute controls the portlet mode.

3.2.2.4. Page headers

The Portlet 2 specification allows portlet to participate to the headers of the page. If you want to allow portlets on the page to add header information to your page then you need to insert a `headers` tag in the `head` section of the page, as shown in the following example:

Example 3.4. Adding portlets header contribution

```
<head>
   <portal:headers/>
   ...
</head>
```

This instructs Simple Portal to insert header information contributed by portlets present on the page at the specified spot.

3.2.2.5. Portlet events

Portlet events provides a powerful way to decouple portlets. After the process action phase, an optional event phase is executed by the portal to process any events generated and produced by portlets. We recommend that you read the portlet specification to learn more about portlet events.

Coordination of portlets via events is scoped by pages. When an event is produced by a portlet on a page, Simple Portal will locate all portlets on that very same page that can consume the produced event. Produced events and consumer portlets are matched using the event's qualified name as specified in `portlet.xml`.

3.2.2.6. Public render parameters

Public render parameters allows several portlets on the same page to share render parameters. Similarly to how portlet events are handled by Simple Portal, pages are natural scopes for shared render parameters. Simple Portal's tag library provides for the definition of initial values for such parameters allowing developpers to configure different pages initialized with different values of the same parameter. This is accomplished via the `pageparam` tag.

Example 3.5. Defining a shared render parameter

```
<portal:page>
    <portal:pageparam namespaceURI="urn:jboss:portal:simple:google" localName="zipcode"
 value="80201"/>
  ...
</portal:page>
```

In the above example, we specify that the shared render parameter (or page parameter) identified by the attribute pair `localName` (`zipcode` in the example) and `namespaceURI` (`urn:jboss:portal:simple:google` in the example) will be initialized with the value `80201` the first time the page is rendered. This value can change if any portlet supporting this shared parameter updates it during an interaction triggered by the end user. However it is possible to make this parameter unmodifiable (i.e. the parameter value will not change even if a portlet tries to update it) by setting the optional `frozen` attribute to the `true` value.

3.2.2.7. Error handling

Errors can be handled either during page rendering or when a portlet is interacted with. Simple Portal categorizes errors and associates each error type with a category name (string) that can be used to for programatic handling. The error categories are as follows:

Table 3.1. Error Categories

Category name	Use case
`not_found`	The portlet that triggered the error cannot be located
`portlet_error`	The portlet triggered an exception
`internal_error`	The portlet triggered an unexpected exception recognized as an internal error
`unavailable`	The portlet is located but has been put out of service

3.2.2.7.1. Error handling during render

Simple Portal can display the content of an alternative page if, for some reason, a portlet fails during the render phase. This is similar to JSP error pages.

Several request attributes are set by Simple Portal so that the markup of the error page can be customized appropriately. The following table sums up these request attributes and their meaning.

Table 3.2. Request Attributes for Error Pages

Attribute name	Meaning
org.gatein.pc.portal.error.status	A <className>String</className> containing the error category as detailed in *Table 3.1, “Error Categories”*
org.gatein.pc.portal.error.cause	A (possibly`null`) <className>Throwable</className> representing the cause of the error, for example, a portlet exception
org.gatein.pc.portal.error.message	A <className>String</className> containing the error message, if any
org.gatein.pc.portal.error.portlet_name	A <className>String</className> containing the name of the portlet that generated the error, as defined on the associated `portlet` tag
org.gatein.pc.portal.error.application_name	A <className>String</className> containing the name of the portlet application that generated the error, as defined on the associated `portlet` tag

Attribute name	Meaning
org.gatein.pc.portal.error.window_id	A <className>String</className> containing the identifier of the window associated with the portlet that generated the error, especially useful when several portlet windows reference the same portlet

The `errorPage` attribute of the `portlet` tag is used to specify which error page to use for this specific portlet. The value of the attribute should be the path to the error page relative to the root of the WAR file for that portlet. Note that it could be a JSP or a plain file.

Example 3.6. Defining an error page

```
<portal:portlet name="JSPPortlet" applicationName="samples-jsp-portlet" errorPage="/WEB-INF/jsp/error.jsp">
  ...
</portal:portlet>
```

3.2.2.7.2. Error handling during action

If a a failure occurs during an interaction with a portlet, Simple Portal will throw a servlet exception with a message set to one of the category names as specified in *Table 3.1, “Error Categories”*

The default error handling strategy is handled by a servlet filter that catches error messages and translates them into HTTP errors. This filter is called
<className>ErrorHandlingFilter</className>
and is declared in the `web.xml` file of Simple Portal WAR file. This allows developers to change the error handling behavior if desired.

Example 3.7. Error handling servlet filter definition

```
<web-app>
  ...
  <filter-mapping>
    <filter-name>ErrorHandlingFilter</filter-name>
    <url-pattern>*.jsp</url-pattern>
  </filter-mapping>
  ...
</web-app>
```

3.2.3. Extended tag library

So far, we have examined the basic building blocks provided by Simple Portal's tag library. We will now examine an extension provided to allow the display of portlets pretty much as they are rendered in classic portals, that is with decorations. This extension is built on top of Simple Portal's tag library and uses the JSP 2.0 tag library extension feature. A pretty good overview of this feature can be found at *http://www.onjava.com/pub/a/onjava/2004/05/12/jsp2part4.html* [http://www.onjava.com/pub/a/onjava/2004/05/12/jsp2part4.html].

3.2.3.1. The extended portlet tag

The extended portlet consists of a JSP tag file located in the folder `/WEB-INF/tags/portal` of Simple Portal's WAR file.

Example 3.8. Example use of the extended portlet tag

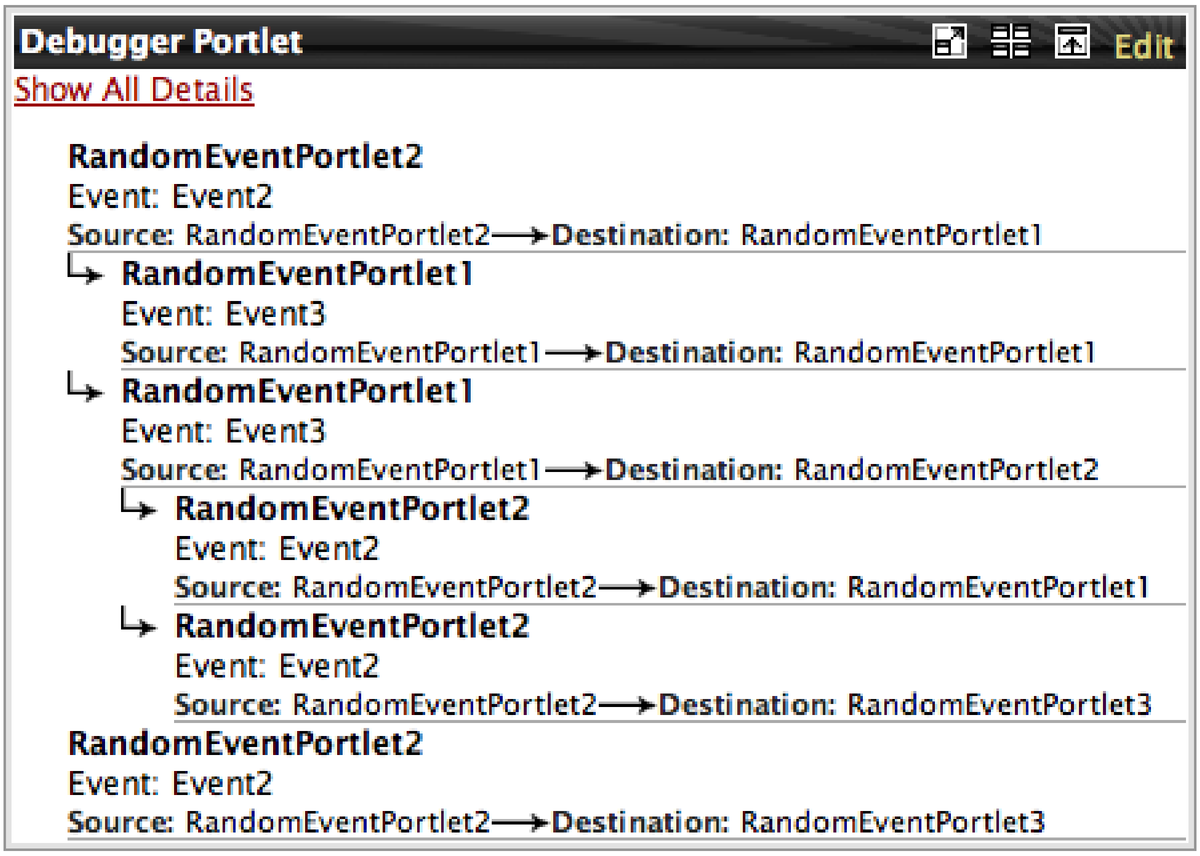
```
<%@ page contentType="text/html" %>
<%@ page language="java" %>
<%@ taglib prefix="xportal" tagdir="/WEB-INF/tags/portal" %>
...
   <xportal:portlet name="GoogleMap" applicationName="samples-google-portlet"/>
...
```

You can consider this extension pretty much like a JSP include, just more powerful. More specifically, the JSP tag file can be edited and tweaked to your needs.

3.3. Portlet debugging

The Portlet 2.0 specification provides a new eventing feature for coordinating several portlets. This long awaited feature is very powerful but can sometime lead to complex scenarios when multiple events are consumed and fired by multiple portlets on the same page.

The simple portal provides a visual debugger that can be used to understand what happens during the event phase orchestrated by the portal. It comes as a portlet that you can place on any page and it shows a tree of events that were produced and consumed during the event phase.


Debugger Portlet

Edit

Show All Details

RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2 → Destination: RandomEventPortlet1

↳ RandomEventPortlet1
Event: Event3
Source: RandomEventPortlet1 → Destination: RandomEventPortlet1

↳ RandomEventPortlet1
Event: Event3
Source: RandomEventPortlet1 → Destination: RandomEventPortlet2

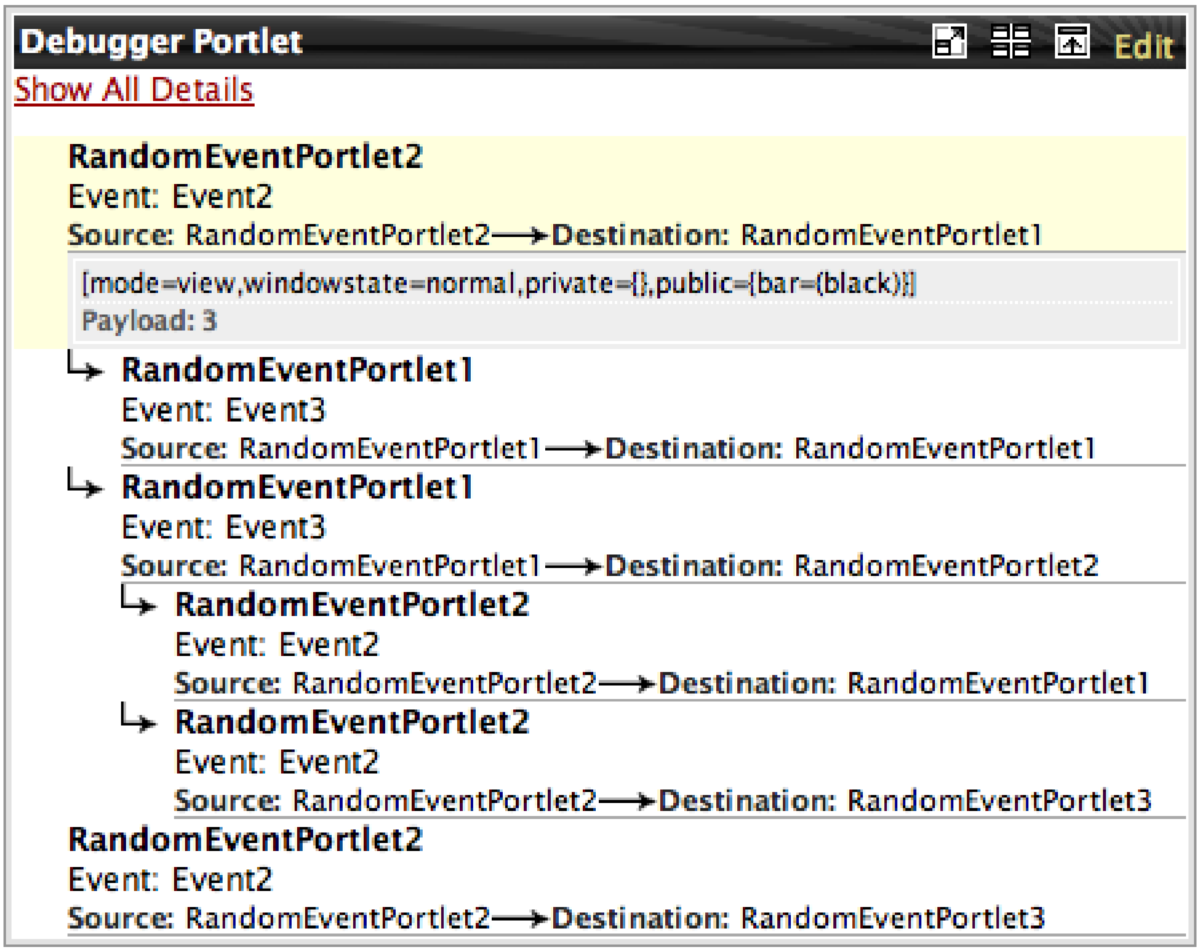
↳ RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2 → Destination: RandomEventPortlet1

↳ RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2 → Destination: RandomEventPortlet3

RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2 → Destination: RandomEventPortlet3

Event debugger portlet.

The event debugger displays a tree of events produced and consumed by portlets. The nodes of the tree don't represent events, they rather represent event routings from a source portlet to a destination portlet. By default it shows the name of the portlet that published the event, the event name and the destination of the event that was chosen by the simple portal during the event distribution phase. Hovering the mouse on a node shows more information.



RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2⟶Destination: RandomEventPortlet1
[mode=view,windowstate=normal,private={},public={bar={black}}]
Payload: 3
↳ RandomEventPortlet1
Event: Event3
Source: RandomEventPortlet1⟶Destination: RandomEventPortlet1
↳ RandomEventPortlet1
Event: Event3
Source: RandomEventPortlet1⟶Destination: RandomEventPortlet2
↳ RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2⟶Destination: RandomEventPortlet1
↳ RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2⟶Destination: RandomEventPortlet3
RandomEventPortlet2
Event: Event2
Source: RandomEventPortlet2⟶Destination: RandomEventPortlet3

Event debugger portlet.

When hovering the mouse on a node you can see the optional event payload represented by the string returned when invoked its `toString()` method and the state of the portlet after the event phase. The state of the portlet consist in its portlet mode, its window state and the set of its render parameters. Adding the event debugger to a page is easy.

Example 3.9. Adding the event debugger to a portal page

```
...<xportal:portlet name="DebuggerPortlet" applicationName="simple-portal"/>...
```

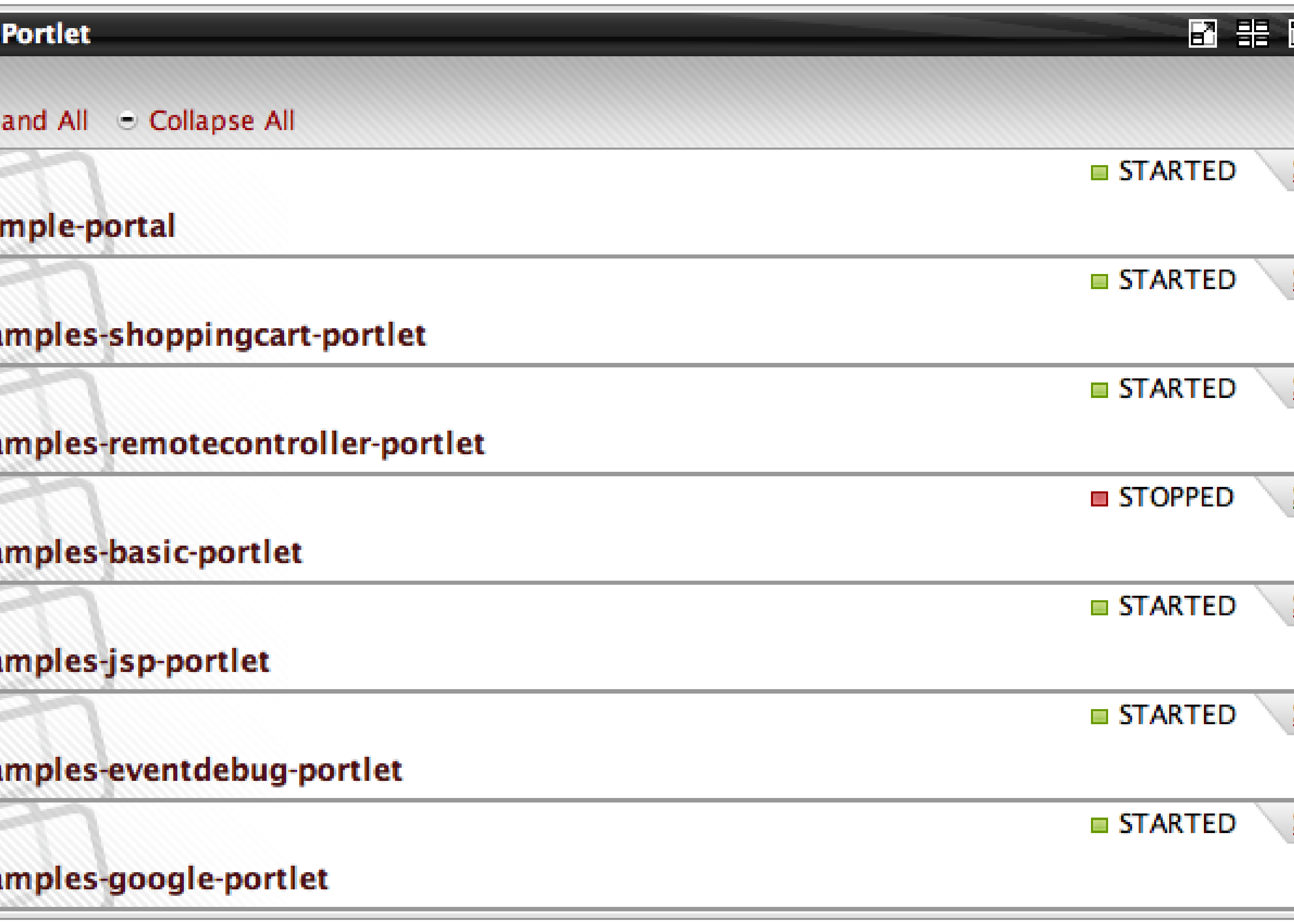
3.4. Administration

3.4.1. Admin portlet

The admin portlet shows the list of portlet applications deployed in the simple portal. For each portlet application it is possible to unfold the appliation to display the portlet contained in the unfolded application as well as the portlet filters.

3.4.1.1. Portlet application administration

By default the admin portlet displays the list of portlet applications. It shows the status of each application and provides the capability to stop or start an application.

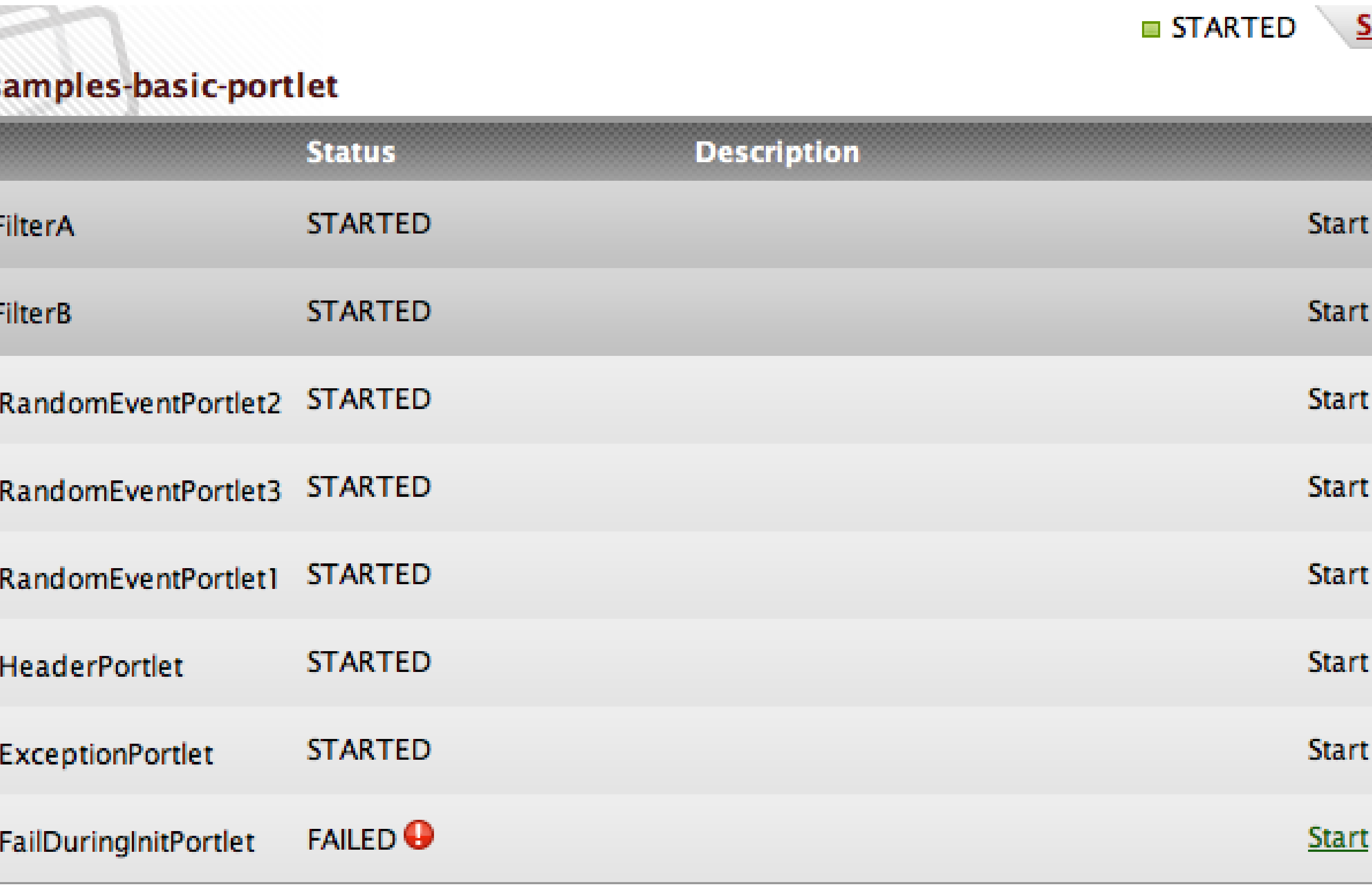


The admin portlet showing all the portlet applications.

On the example we can see that all the applications are in started mode except the *samples-basic-portlet* application. It is possible to manage the life cycle of each application by clicking on the *start* link when it is stopped or clicking on the *stop* link when it is started.

3.4.1.2. Portlet container and filter administration

Selecting a particular portlet application unfolds it and shows the list of portlet containers that the application contains as well as the filters it contains.



🟩 STARTED

amples-basic-portlet

	Status	Description	
FilterA	STARTED		Start
FilterB	STARTED		Start
RandomEventPortlet2	STARTED		Start
RandomEventPortlet3	STARTED		Start
RandomEventPortlet1	STARTED		Start
HeaderPortlet	STARTED		Start
ExceptionPortlet	STARTED		Start
FailDuringInitPortlet	FAILED		Start

The admin portlet showing the portlets container and filters contained in an application.

Again here it displays the name of the container and filters, the status of the life cycle and a link to start or stop the corresponding item.

3.4.2. Logging configuration

todo