

## First steps in Open Development

Sander van der Waal

OSS Watch Open development workshop  
7 December 2009

Unless otherwise indicated, all materials included are © 2009 University of Oxford  
licensed under a [Creative Commons Attribution-ShareAlike 2.0 England & Wales licence](#)

## Who is Sander van der Waal?

- Member of staff at OSS Watch since Oct. 2009
- Java software developer
- Worked with private software companies
- Heavily involved with our project registry framework Simal

## Agenda

- Why GX got involved with open source
- The project: Apache Felix
- Experiences with how to effectively use
  - Mailing list
  - Issue tracker
  - Version control system



# SS Watch



## GX

- Leading vendor of CMS software in the Netherlands.
- Developed in-house CMS to be sold and tailor-made for large customers
- Project for new CMS version with complete new architecture started first half 2006
- Focus on open standards and open software

## Why get involved with open source ?

- Don't reinvent the wheel
- Use open standards and implementations
- Specific for GX:
  - Use OSGi → Apache Felix
  - Use JCR → Apache Jackrabbit
- My role was on the OSGi-team

## OSGi and Apache Felix

- OSGi: Spec. of module system for Java
  - Update modules while application running
  - Explicit and good version numbering
- Apache Felix:
  - Implementation of OSGi standard
  - Apache Incubator project (2006)
  - Relatively new community

## Getting started with Apache Felix

- Download software from website
- Check out source code from version control
- Subscribe to developer mailing list

## Use of public mailing lists

- Our project team learnt a lot from 'lurking'
- Project has to assure all communication is on the list
- All communication between colleagues on the project also on the list
- Separate target groups in different lists, when appropriate



## Interact and learn

Subject: Embedding Felix

[Actions](#) ▾

Subject: Re: Embedding Felix

[Actions](#) ▾

From: **Herko ter Horst** (her...@terhorst.net)

Date: Apr 5, 2006 5:38:34 am

List: **org.apache.felix.dev**

[What alternatives should I consider? Maybe a separate management service, but how to locate/access it in a standard J2SE environment? JMX?](#)

This is the approach I'm sort of assuming in my OSGi Launcher project (which I hope to release Real Soon Now(tm)).

The different context implementations in that project allow you to launch an OSGi framework (any implementation, not just Felix) from different contexts like a regular Java application, a WebStart app, a servlet container, etc. The project also allows some limited interaction through a special interface. However, the actual application (running on the framework) is assumed to be under the control of a management bundle. Adding/removing/updating bundles would be a task for that bundle.

Perhaps you can describe a bit more of your use case? For example, what is the reason the part of your application that wants "to have access to it to maybe install some bundles, access services, restart or shut it down" needs to remain outside the OSGi framework?

[Best Regards,](#)

[Bram de Kruijff](#)

Cheers,

Herko

application. Hope

from another  
pl it? For

Subject: Re: Embedding Felix

[Actions](#) ▾

From: **Marcel Offermans** (marc...@luminis.nl)

Date: Apr 5, 2006 5:59:55 am

List: **org.apache.felix.dev**

Bram de Kruijff wrote:

[What alternatives should I consider? Maybe a separate management service, but how to locate/access it in a standard J2SE environment? JMX?](#)

If you want to manage (monitor, update, ...) bundles from within a standard J2SE environment, using JMX is a good solution. Especially if you use Java 5 with JMX built-in. It's fairly easy to expose bundles and services through JMX so you can manage them and that might even blend in well with the management of the application that the OSGi framework is wrapped in (if you use JMX for that too).

Greetings, Marcel

## Promote give and take

Subject: RE: Error building Felix [Actions](#) ▾

From: **Bram de Kruijff** (bra...@gx.nl)

Date: May 31, 2006 4:31:22 am

List: **org.apache.felix.dev**

Is this the result of some sort of "mvn deploy" operation or something? If it is easy, tell me what to do and I will update it.

yes, 'mvn deploy' will transfer your artifacts to the destination specified by distributionManagement in de main pom.xml. It would be nice if this repo was somewhat up to date (at this point we use an internal mirror to be able to distribute up-to-date snapshot artifacts). You probably would want to let CI take care of this for snapshots. Is there a continuum running somewhere?

best regards,  
Bram

-----Original Message-----

From: Richard S. Hall [mailto:hea...@ungoverned.org]

Sent: Wednesday, May 31, 2006 1:12 PM

To: feli...@incubator.apache.org

Subject: Re: Error building Felix

## Issue tracker

- Make sure you have and use an issue tracker
- Allow people to register on the issue tracker for
  - Issue creation
  - Patch submission
  - Commenting on issues
- Send issue tracker updates to the mailing list

# SS Watch



## Issue Details [HTML](#) | [Word](#) | [Printable](#)

**Key:** [FELIX-75](#)  
**Type:** Improvement  
**Status:** Closed  
**Resolution:** Won't Fix  
**Priority:** Blocker  
**Assignee:** Unassigned  
**Reporter:** [Richard S. Hall](#)  
**Votes:** [2](#)  
**Watchers:** [3](#)  
**Operations**

[Attach file](#) to this issue

### [Felix](#)

## Improve bundle activator detection in Maven OSGi plugin

Created: 24/May/06 06:59 PM Updated: 30/Jan/08 10:32 AM

**Component/s:** [Maven OSGi Plugin \(Deprecated\)](#)

**Affects Version/s:** None

**Fix Version/s:** None

**Time Tracking:** Not Specified

**Resolution Date:** 30/Jan/08 10:32 AM

[Bram de Kruijff](#) added a comment - 05/Jun/06 06:53 PM

[ [Permlink](#) | [x Hide](#) ]

Problem also occurs in dependencymanager bundle. The plugin finds the abstract DependencyActivatorBase class. I guess there should be some way to say: "There is no spoon."

vote on resolved issues.

### [Watching](#):

You are not watching this issue.  
[Watch it](#) to be notified of changes

### [Worklog](#):

You don't have permission to work on this issue.

[John Conlon](#) added a comment - 26/May/06 03:34 AM

[ [Permlink](#) | [x Hide](#) ]

The OSGi plugin is creating an invalid manifest for the org.osgi.core bundle, by declaring a Bundle-Activator to be the Interface.

Manifest-Version: 1.0

Archiver-Version: Plexus Archiver

[Bram de Kruijff](#) added a comment - 05/Jun/06 06:53 PM

[ [Permlink](#) | [x Hide](#) ]

Problem also occurs in dependencymanager bundle. The plugin finds the abstract DependencyActivatorBase class. I guess there should be some way to say: "There is no spoon."

[Marcel Offermans](#) added a comment - 07/Jun/06 06:49 PM

[ [Permlink](#) | [x Hide](#) ]

JISC

[#FELIX-137] Service... x +

https://issues.apache.org/jira/browse/FELIX-137

The Apache Software Foundation  
http://www.apache.org/

HOME BROWSE PROJECT FIND ISSUES CREATE NEW ISSUE QUICK SEARCH:

Issue Details (XML | Word | Printable)

Key: [FELIX-137](#)

Type: Bug

Status: Closed

Resolution: Fixed

Priority: Major

Assignee: Marcel Offermans

**Felix**

**ServiceDependency fails to invoke callback methods when implemented in superclass (patch included)**

Created: 01/Sep/06 09:46 AM Updated: 09/Feb/07 06:52 PM

Component/s: [Dependency Manager](#)

Affects Version/s: felix-0.8.0

Fix Version/s: felix-0.9.0

[Return to search](#)



## Description

[Hide](#)

ServiceDependency fails to invoke callback methods when implemented in superclass. The problem is in the invokeCallbackMethod method cause it will never loop. I include 2 patches. The first just fixes the loop, but I was wondering why getDeclaredMethod is used. Using getMethod instead seems to work just fine.

grz,  
Bram

[Marcel Offermans](#) added a comment - 06/Dec/06 01:44 PM

[ [Permlink](#) | [Hide](#) ]

Still not correctly implemented, incorporate Bram's fixes.

[Marcel Offermans](#) added a comment - 06/Dec/06 03:24 PM

[ [Permlink](#) | [Hide](#) ]

Applied the patch supplied by Bram.

Added one extra option to make sure that the method stops looking for a method if the invoked method itself throws an exception (which means we did find and invoke the method, it just did not complete normally).

[Marcel Offermans](#) added a comment - 04/Sep/06 01:26 PM

[ [Permlink](#) | [Hide](#) ]

Just committed a patch that implements a new algorithm to invoke methods in any (super)class.

JISC



## Issue Details

### Summary:

ServiceDependency fails to invoke callback methods when implemented in superclass (patch included)

**Key:** [FELIX-137](#)

**Type:** Bug

**Status:** Closed

**Resolution:** Fixed

**Priority:** Major

**Assignee:** [Marcel Offermans](#)

**Reporter:** [Bram de Kruijff](#)

**Votes:** 0

**Watchers:** 1

## Attach Files

Use this form to attach multiple files to this issue. You can also explain what the files are for using a comment.

Attachment:

ServiceDepe...java.patch

No file chosen

The maximum file upload size is 10.00 MB. Please zip files larger than this.

**Comment:** (an optional comment describing this update)

Comment:

fix for multiple callbacks  
\* removes recursion  
\* changes approach to breadth first

Viewable By:

Attachment License:

- Attachment not intended for inclusion  
 Grant license to ASF for inclusion in ASF works (as per the [Apache License §5](#))

Contributions intended for inclusion in ASF products (eg. patches, code) must be licensed to ASF under the terms of the [Apache License](#). Other attachments (eg. log dumps, test cases) need not be.

# SS Watch



## Patch applied in trunk

The screenshot displays an IDE window for `ServiceDependency.java`. The code shows a patch applied to the `invokeCallbackMethod` method. The patch is a `synchronized (this)` block that updates `m_trackedServiceName` and then calls `invokeMethod` with a new array of service references. The `invokeMethod` method iterates through a list of signatures to find a matching method.

```
    }  
  
    private void invokeCallbackMethod(Object instance, String methodName, Service  
        Class currentClazz = instance.getClass();  
        boolean done = false;  
        while (!done && currentClazz != null) {  
            Class trackedServiceName;  
            synchronized (this) {  
                trackedServiceName = m_trackedServiceName;  
            }  
            done = invokeMethod(instance, currentClazz, methodName,  
                new Class[][] {{ServiceReference.class, trackedServiceName}}, {Ser  
                new Object[][] {{reference, service}, {reference, service}, {refe  
                false});  
            if (!done) {  
                currentClazz = currentClazz.getSuperclass();  
            }  
        }  
        if (!done && currentClazz == null) {  
            throw new NoSuchMethodException(methodName);  
        }  
    }  
  
    private boolean invokeMethod(Object object, Class clazz, String name, Class[]  
        Method m = null;  
        for (int i = 0; i < signatures.length; i++) {  
            Class[] signature = signatures[i];
```

The right-hand pane shows the 'Task List' and 'Outline' view. The method `invokeCallbackMethod(Object, Class, String, Class[])` is highlighted in the outline, corresponding to the code in the editor.



# SS Watch



## SVN used to trace IP and kudos

The screenshot shows an IDE window with a Java file named `ServiceDependency.java`. The code includes a `private void invokeCallbackMethod` method that iterates through a list of signatures to find a matching method on a given instance. A commit message is displayed in a yellow box, indicating a patch was applied by FELIX-137.

```
private void invokeCallbackMethod(Object instance, String methodName, ServiceReference
    Class currentClazz = instance.getClass();
    boolean done = false;
    done = invokeMethod(instance, currentClazz, methodName,
        new Class[][] {{ServiceReference.class, trackedServiceName}, {ServiceReference.class, trackedServiceName}},
        new Object[][] {{reference, service}, {reference, service}, {reference, service}},
        false);
    if (!done) {
        currentClazz = currentClazz.getSuperclass();
    }
    if (!done && currentClazz == null) {
        throw new NoSuchMethodException(methodName);
    }
}

private boolean invokeMethod(Object object, Class clazz, String name, Class[] signatures) {
    Method m = null;
    for (int i = 0; i < signatures.length; i++) {
        Class[] signature = signatures[i];
```

marrs 483287 06-Dec-2006 23:21  
FELIX-137 Applied the patch provided by Bram with a small difference: if the invoked method itself throws an exception, we stop looking for a method.

Task List Outline

- invokeAdded(ServiceReference)
- modifiedService(ServiceReference)
- invokeChanged(ServiceReference)
- removedService(ServiceReference)
- invokeRemoved(): void
- invokeRemoved(ServiceReference)
- makeAvailable(): boolean
- makeUnavailable(): boolean
- getCallbackInstance(): Object
- invokeCallbackMethod(Object, Class, String, Class[])
- invokeMethod(Object, Class, String, Class[])
- setService(Class): ServiceReference
- setService(Class, String): ServiceReference
- setService(Class, ServiceReference): ServiceReference
- setDefaultImplementation(Object): ServiceReference
- setRequired(boolean): ServiceReference
- setAutoConfig(boolean): ServiceReference
- setAutoConfig(String): ServiceReference
- setCallbacks(String, String): ServiceReference
- setCallbacks(String, String, ServiceReference): ServiceReference
- setCallbacks(Object, String, ServiceReference): ServiceReference
- setCallbacks(Object, String, ServiceReference): ServiceReference
- ensureNotActive(): void
- toString(): String
- getAutoConfigName(): String



## Results at GX

- Apache Felix and Jackrabbit part of current release
- GX has committer in Apache Jackrabbit
- GX is member of expert group JSR-283 for next version of JCR

## To summarise...

- Have a good public website
- Use a version control system
- Have public mailing lists
- Use the mailing list wherever possible
- Create and maintain an issue tracker
- Allow public registration on issue tracker

.. and link the tools!

- Promote the issue tracker to community
- Have issue tracker updates sent to the list
- Mention relevant issue number in commit log

## First steps in open development

- We can help:
  - <http://www.oss-watch.ac.uk>
  - [info@oss-watch.ac.uk](mailto:info@oss-watch.ac.uk)
- Questions?