

# Apache Felix Web Console

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- RnD Team at Adobe Research Switzerland
- Member of the Apache Software Foundation
  - Apache Felix and Apache Sling (PMC and committer)
  - And other Apache projects
- OSGi Core Platform and Enterprise Expert Groups
- Member of the OSGi Board
- Book / article author, technical reviewer, conference speaker

# Problem Description

- Manage an OSGi based application
- Remotely
- Easy of use
- Extensibility
- Offline support

# Various Solutions

- JMX
- Text based
  - Apache Felix Shell, Apache Felix Gogo Shell
  - Knopflerfish Shell
  - Equinox Console
  - OSGi RFC 147 (Command Line Interface)
- GUI based
  - Knopflerfish Desktop (Swing)
  - **Apache Felix Web Console**

# Apache Felix Web Console

- Rich set of core functionality
  - Bundles
  - Services
  - Configuration Admin
  - System Information
- JQuery based UI
- Extensible
- Pluggable authentication
- Still light-weight

# Installation

- Dependencies
  - OSGi Http Service
  - Commons IO 1.4 (\*)
  - Commons File Upload 1.2 (\*)
  - org.json (.e.g. Apache Geronimo Bundles: json-20090211) (\*)
- Two flavors: bundle with and without above marked dependencies
- Additional optional dependencies
- Additional plugins

Demo

# Extension Points

- Branding
- Translations
- Security Provider
- Plugins
- Inventory Printer (Configuration Printer)

- Service Interface: BrandingPlugin
- Default Branding: DefaultBrandingPlugin
- Branding Fragment
  - /META-INF/webconsole.properties  
webconsole.brand.name = Apache Sling Web Console  
webconsole.product.name = Apache Sling  
webconsole.product.url = <http://sling.apache.org>  
[webconsole.product.image = /res/sling/logo.png](/res/sling/logo.png)  
[webconsole.favicon = /res/sling/favicon.ico](/res/sling/favicon.ico)
- Sample
  - Sling Web Console Branding Plugin

# Translations

- Out-of-the-box
  - Bulgarian, English, German, Russian
- Extensible
  - Fragment to the Web Console
  - Based on Standard Bundle Localization
  - OSGI-INF/l10n/bundle\*.properties

# Web Console Security

- Secure access to the web console!
  - Consider blocking internet access
- Configure authentication

# Security Provider

- Service interface: `WebConsoleSecurityProvider`
  - HTTP Basic Authentication Based
  - Validates Username / Password
  - Access Control (hook only)
- Service Interface: `WebConsoleSecurityProvider2`
  - Extends `WebConsoleSecurityProvider`
  - Flexible Authentication (implementing `HttpContext.handleSecurity`)

- Implementations
  - Default: Single configurable User
  - Apache Karaf: JAAS based authentication
  - Apache Sling
    - Authenticates against JCR Repository
    - Supports Sling Authentication Setup

# Security Provider

- WebConsoleSecurityProvider, WebConsoleSecurityProvider2
- Web Console uses them for authentication
- Methods for authorization not used atm
- Authorization is on the road map for next version!

# Plugins

- javax.servlet.Servlet service
- Optional extend AbstractWebConsolePlugin or SimpleWebConsolePlugin
- Service properties
  - felix.webconsole.label
  - felix.webconsole.title
  - felix.webconsole.category

Apache Felix Web Console – Bundles

localhost:4502/system/console/bundles

## Apache Felix Web Console Bundles

Main OSGi Sling Status Web Console

Bundles 3 bundles in total - all 173 bundles active

Apply Filter Filter All Reload Install/Update... Refresh Packages

Id	Bundle	Version	Category	Status	Actions
0	Services le ( <i>org.apache.felix.framework</i> )	4.2.0		Active	
1	▶ Adobe Granite Startup Module ( <i>com.adobe.granite.startup</i> )	0.6.2	granite	Active	
2	▶ jcl-over-slf4j ( <i>jcl.over.slf4j</i> )	1.6.4		Active	
3	▶ log4j-over-slf4j ( <i>log4j.over.slf4j</i> )	1.6.4		Active	
4	▶ Apache Felix Configuration Admin Service ( <i>org.apache.felix.configadmin</i> )	1.6.1.R1515316	osgi	Active	
5	▶ Apache Sling SLF4J Implementation ( <i>org.apache.sling.commons.log</i> )	3.0.0	sling	Active	

# Sample Plugin #1

```
@Component
@Service(value=HttpServlet.class)
@Properties({
    @Property(name="felix.webconsole.label", value="sample"),
    @Property(name="felix.webconsole.title",
        value="Sample Plugin"),
    @Property(name="felix.webconsole.category",
        value="My App")
})
public class SamplePlugin extends HttpServlet {

    @Override
    public void service(ServletRequest rq, ServletResponse rs)
        throws ServletException, IOException {
        rs.getWriter().println("Hello World...");
    }
}
```

## Sample Plugin #2

```
public class Sample2 extends SimpleWebConsolePlugin {  
    public Sample2(BundleContext ctx) {  
        super("sample2", "Sample Plugin #2", null);  
        register(ctx);  
    }  
  
    @Override  
    protected void renderContent(  
        HttpServletRequest req,  
        HttpServletResponse res)  
        throws IOException {  
        res.getWriter().println("Hi There ...")  
    }  
}
```

# Plugins

- Rendering: `service()`, `doGet()` or `renderContent()`
- Interaction: `service()`, `doPost()`
- UI: jQuery
- Add own js, css as resources
- Simple templating support

# Apache Felix Inventory

- OSGi service providing status information
  - Bundle list, services, system properties etc.
- Different formats: text, html, json
- Optional attachments
- Direct support in web console



The screenshot shows the Apache Felix Web Console interface. The browser address bar indicates the URL is localhost:4502/system/console/status-System Properties. The page title is "Apache Felix Web Console System Properties". The Apache Felix logo is visible in the top right corner. The main content area displays a list of system properties, including:

```
apple.awt.graphics
apple.awt.graphics
awt.nativeDoubles
awt.toolkit = appl
com.rsa.crypto.def
com.rsa.crypto.jc
crx.index.maxSize
crx.index.maxSize
crx.index.maxSize
derby.stream.error
file.encoding = Mac
file.encoding.pkg
file.separator = /
ftp.nonProxyHosts
gopherProxySet = f
http.nonProxyHosts
java.awt.graphics
java.awt.headless
java.awt.printerjob
java.class.path = c
java.class.version
java.endorsed.dirs
java.ext.dirs = /L
java.home = /System
java.io.tmpdir = /
java.library.path
java.runtime.name
java.runtime.version
java.specification
java.specification
java.specification.version = 1.6
java.vendor = Apple Inc.
java.vendor.url = http://www.apple.com/
java.vendor.url.bug = http://bugreport.apple.com/
java.version = 1.6.0_65
java.vm.info = mixed mode
java.vm.name = Java HotSpot(TM) 64-Bit Server VM
java.vm.specification.name = Java Virtual Machine Specification
java.vm.specification.vendor = Sun Microsystems Inc.
java.vm.specification.version = 1.0
```

The interface also includes navigation tabs (Main, OSGi, Sling, Status, Web Console), a date indicator (October 25, 2011), and download options (Download As Text, Download As Zip, Download Full Text, Download Full Zip).

# Inventory Printer Sample

```
@Component
@Service(value={InventoryPrinter.class})
@Properties({
    @Property(name=InventoryPrinter.NAME, value="slingjobs"),
    @Property(name=InventoryPrinter.TITLE, value="Sling Jobs"),
    @Property(name=InventoryPrinter.FORMAT,
        value={"TEXT", "JSON"})
})
public class InventoryPlugin implements InventoryPrinter {

    public void print(final PrintWriter pw,
        final Format format, final boolean isZip) {
        // print something
    }
}
```

Attachments: ZipAttachmentProvider

# Offline Usage

- Status zip contains
  - Output from all inventory printers
  - Output from special web console plugins
  - Attachments
  - JSON files
- Automated analysis
  - Bundle list and status
  - Configurations
  - Log files

# Demo

- Today: Simple REST API
  - Bundles
  - Config Admin
  - <http://felix.apache.org/documentation/subprojects/apache-felix-web-console/web-console-restful-api.html>

- RFC 182 - REST Interface for OSGi
- Definition of REST API for
  - Framework status
  - Framework operations
- Bundle states
- Bundle operations
- Service states
- Service operations

- RFC 182 - REST Interface for OSGi
- Extension mechanism
  - Config Admin?
- Java client
- Javascript client

# Apache Felix Web Console

- Flexible and extensible administration console
  - Web based
- Many plugins available
- Offline support
- Planned major task
  - Authorization
  - REST support