



# Developing Java EE/OSGi Applications with Apache Geronimo

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Presented by



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# Who Am I



- Kevan Miller
- Employer: IBM
- Active at the ASF since 2005:
  - Geronimo (PMC Chair)
  - OpenEJB, Aries, OpenWebBeans
  - Mentoring Incubator Podlings:
    - Bean Validation, Kitty, SIS, VCL, Wink

# Agenda



- Discuss application development on Apache Geronimo
  - Introduction
  - Installation
  - Command and control
  - Deployment plans
  - IDE support

# !Agenda



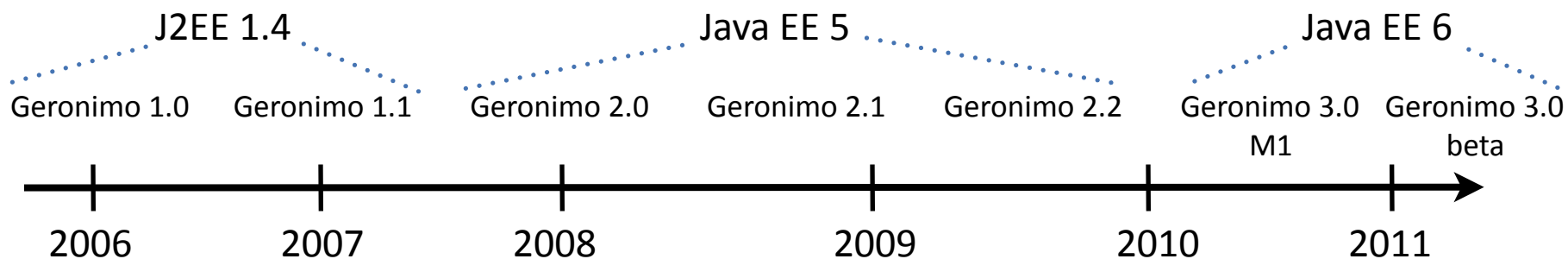
- Won't be discussing specific Java EE or OSGi technologies in any depth

# Geronimo Overview

- ASF project started in 2003
- Mission:

*Create an Open Source application server  
from Best-of-Breed Open Source components*

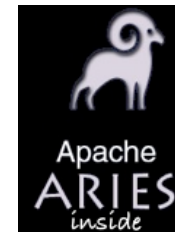
- Release history:



# Apache Geronimo



CXF



Karaf



Tomcat



Derby

Bean Validation



# Apache Geronimo



# Geronimo 3.0



- 3.0-beta release vote underway
  - Java EE 6 (full and web profile)
  - OSGi Enterprise Applications (Aries)
  - OSGi Kernel Restructure



# Install/Setup

- Build from source or download:
  - <http://geronimo.apache.org/downloads.html>
- `untar / unzip` to install
- `JAVA_HOME` environment variable is now optional

# Geronimo Directory Layout

Directory	Description
<code>bin/</code>	Geronimo commands (e.g. <code>deploy</code> , <code>geronimo run</code> , ...)
<code>deploy/</code>	Hot-Deploy for Java EE apps
<code>etc/</code>	OSGi / Karaf configuration
<code>hot-bundles/</code>	Hot-Deploy for OSGi bundles
<code>lib/</code>	Small set of geronimo and karaf jars
<code>repository/</code>	Maven-format repository
<code>schema/</code>	Schemas for geronimo deployment plans
<code>var/</code>	geronimo, tomcat, logging configuration files

# Configuration Overrides



- **var/config/config-substitutions.properties**
  - Simple property file to configure commonly changed configuration options:

```
NamingPort = 1099
```

```
ServerHostname = 0.0.0.0
```

```
PortOffset = 0
```

```
MaxThreadPoolSize = 500
```

```
MinThreadPoolSize = 200
```

```
JMXPort = 9999
```

```
HTTPPort = 8080
```

```
HTTPSPort = 8443
```

# Server control

`geronimo command <options>`

Commands	Description
<code>geronimo run</code>	Run geronimo in foreground
<code>geronimo start</code>	Run geronimo in background
<code>geronimo stop</code>	Stop running server
<code>geronimo jpda run start</code>	Run geronimo in debug mode

Options	Description
<code>-q --quiet</code>	Suppress startup progress information
<code>-l --long</code>	Verbose startup progress info
<code>-c --clean</code>	Clean OSGi bundle cache before starting server
<code>-v -vv -vvv</code>	Verbose logging, very verbose, etc

*Example:* `geronimo run --long`

# Deployment



- Deploy options:
  - command line: 'deploy'
  - karaf shell
  - admin console
  - hot deploy: deploy and hotbundles

# Command line deploy

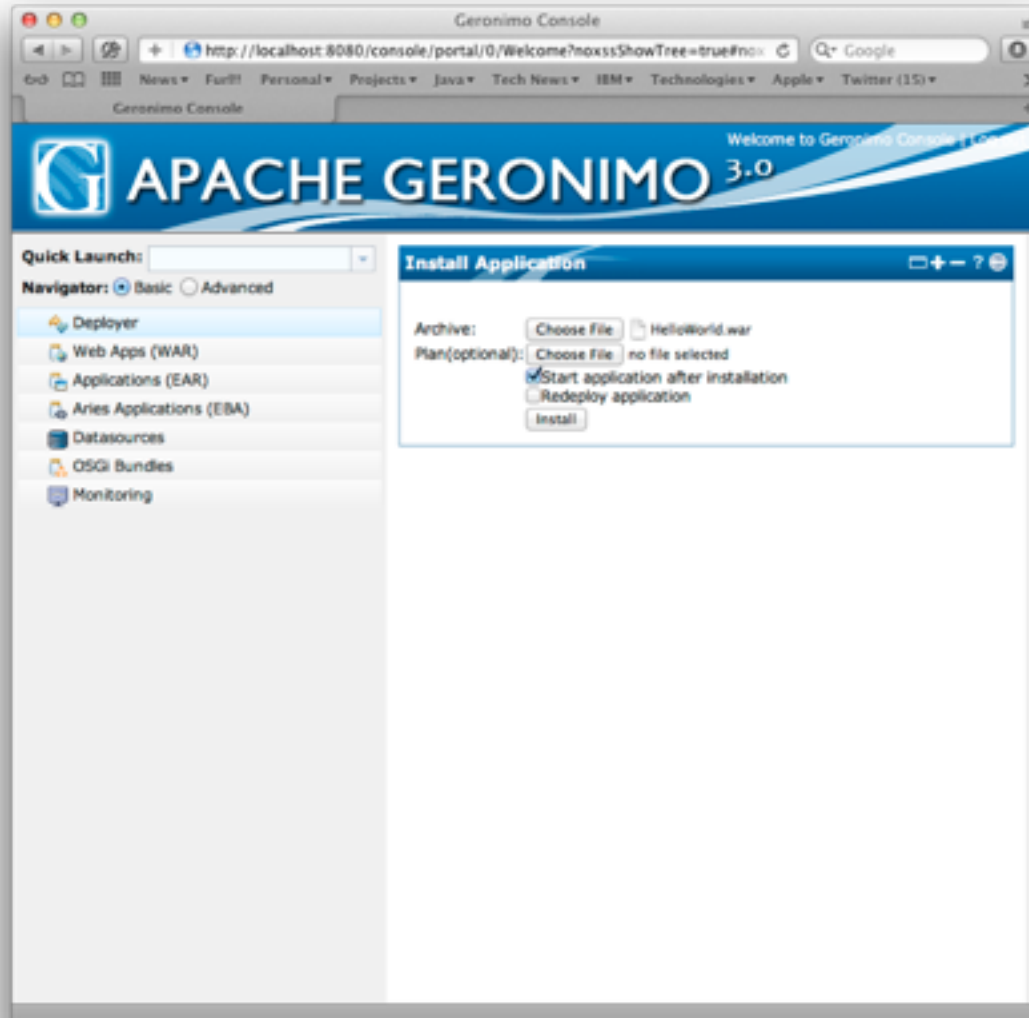
```
deploy <general-options> command <command-options>  
'deploy deploy my-web-app.war geronimo-web.xml'
```

General Options	Description
--host (default: localhost)	hostname/ip address of the server
--port (default: 1099)	Port number of geronimo server

Deploy Command Options	Description
archive (required)	Filename of the WAR, EAR, RAR, EJB JAR
deployment plan (optional)	Filename of the geronimo deployment plan

*Example:* `deploy deploy HelloWorld.war geronimo-web.xml`

# Admin Console deploy



# Deployment Plans

- Geronimo-specific xml files used to configure application resources/behavior
  - ClassLoading
  - resource-refs
  - context-root
  - security
  - GBean configuration
- Documentation:
  - <https://cwiki.apache.org/GMOxDOC30/understanding-deployment-plans.html>



# Deployment Plans...



- Package in archives META-INF/ directory and will be automatically processed
- Or separate file specified at deploy time

Plan name	Description
geronimo-web.xml	WAR configuration (WEB-INF/)
geronimo-application.xml	EAR configuration (META-INF/)
openejb-jar.xml	EJB JAR configuration
geronimo-ra.xml	RAR configuration

# <environment> element



```
<web-app xmlns="http://geronimo.apache.org/xml/ns/j2ee/web-2.0.1"
  xmlns:sys="http://geronimo.apache.org/xml/ns/deployment-1.2">
```

```
<sys:environment>
```

```
<sys:moduleId>
```

```
<sys:groupId>org.foo</sys:groupId>
```

```
<sys:artifactId>bar</sys:artifactId>
```

```
<sys:version>1.0</sys:version>
```

```
<sys:type>car</sys:type>
```

```
</sys:moduleId>
```

```
<sys:dependencies>
```

```
<sys:dependency>
```

```
<sys:groupId>org.foo</sys:groupId>
```

```
<sys:artifactId></sys:artifactId>
```

```
<sys:version>1.2</sys:version>
```

```
<sys:type>car</sys:type>
```

```
</sys:dependency>
```

```
</sys:dependencies>
```

```
<sys:bundle-activator/>
```

```
<sys:bundle-classPath/>
```

```
<sys:import-package/>
```

```
<sys:export-package/>
```

```
<sys:require-bundle/>
```

```
<sys:dynamic-import/>
```

```
<sys:hidden-classes/>
```

```
<sys:inverse-classloading/>
```

```
</sys:environment>
```

```
</web-app>
```

maven-based naming for  
module control

legacy dependency  
management

OSGi-based mechanism  
to control ClassLoading

legacy ClassLoading  
controls

# geronimo-web.xml



```
<web-app xmlns="http://geronimo.apache.org/xml/ns/j2ee/web-2.0.1"
  xmlns:sec="http://geronimo.apache.org/xml/ns/security-2.0"
  xmlns:sys="http://geronimo.apache.org/xml/ns/deployment-1.2">

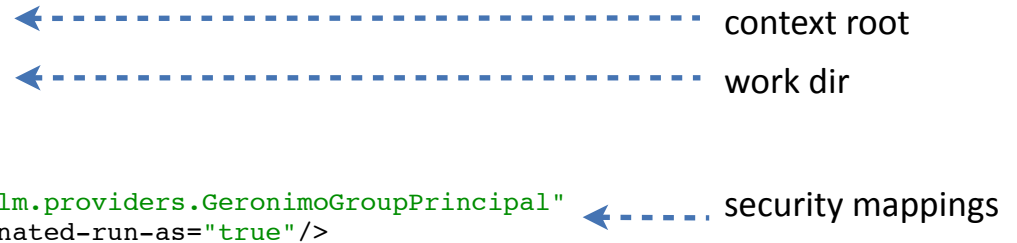
  <sys:environment>
    <sys:moduleId>
      <sys:groupId>org.foo</sys:groupId>
      <sys:artifactId>bar</sys:artifactId>
      <sys:version>1.0</sys:version>
      <sys:type>car</sys:type>
    </sys:moduleId>
  </sys:environment>

  <context-root>contextroot</web:context-root>

  <work-dir>workdir</web:work-dir>

  <sec:security>
    <sec:role-mappings>
      <sec:role role-name="admin">
        <sec:principal class="o.a.g.s.realm.providers.GeronimoGroupPrincipal"
          name="admin" designated-run-as="true"/>
      </sec:role>
    </sec:role-mappings>
  </sec:security>

</web-app>
```



# geronimo-application.xml



# openejb-jar.xml



```
<openejb-jar xmlns="http://openejb.apache.org/xml/ns/openejb-jar-2.2"
             xmlns:sys="http://geronimo.apache.org/xml/ns/deployment-1.2">

  <sys:environment>
    <sys:moduleId>
      <sys:groupId>org.foo</sys:groupId>
      <sys:artifactId>my-openejb-jar</sys:artifactId>
      <sys:version>1.0</sys:version>
      <sys:type>ear</sys:type>
    </sys:moduleId>
  </sys:environment>

  <enterprise-beans>
    <entity>
      <ejb-name>ExchangeRate</ejb-name>
      <local-jndi-name>ExchangeRate</local-jndi-name>
      <resource-ref>
        <ref-name>jdbc/BankDataSource</ref-name>
        <resource-link>BankPool</resource-link>
      </resource-ref>
    </entity>
  </enterprise-beans>
</openejb-jar>
```

example entity module

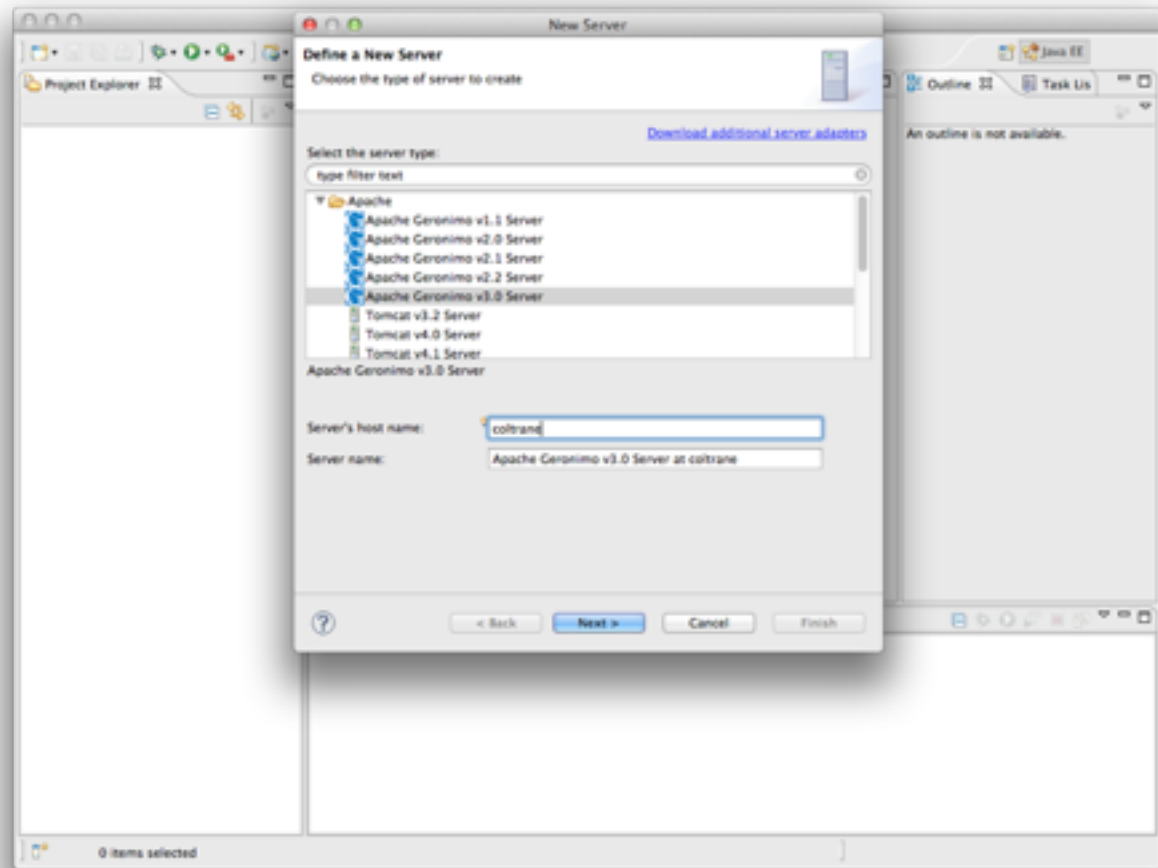


# IDE Support

- Eclipse
  - Geronimo produces a WTP server adapter for server control, geronimo specific configuration
  - OSGi tooling is also available
- NetBeans
  - Several NetBeans projects including:
    - <http://code.google.com/p/wasce-plugin/>
- IDEA
  - Documentation for

# Define a server

- Server ->



Thanks!



# Resources



- Geronimo Information:
  - <http://geronimo.apache.org>
  - <https://cwiki.apache.org/GMOxDOC30/documentation.html>
- Contact the Geronimo project:
  - [user@geronimo.apache.org](mailto:user@geronimo.apache.org)
  - [dev@geronimo.apache.org](mailto:dev@geronimo.apache.org)
  - <irc://irc.freenode.net/geronimo>

# More information

- Java EE
  - <http://download.oracle.com/javaee/6/tutorial/doc/>
- OSGi
  - <http://aries.apache.org/>

# Contact



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