

# Plugin and plugins group

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Apache Geronimo is now assembled completely out of plugins including the server configuration files, in this section we will explain the overview of plugin system and introduce concept of plugin groups betaken starting from v2.2.

## Plugin basics

A geronimo plugin consists of a classloader specification, optional classes, optional service or component configuration, and information about how to install it in Geronimo. The classloader specification and service configuration is specified in a Geronimo plan (and possibly other plans such as a javaee spec DD or annotations). The information about how to install the plugin is provided in the `META-INF/geronimo-plugin.xml` file. This file includes details such as the category and description, dependency information showing what else needs to be installed with this plugin, information about files to be unpacked on installation, and configuration information showing how and when the plugin will be started. Before looking at the more complicated aspects of the plugins lets look at a simple example of `geronimo-plugin.xml`. Here is an example for the jetty web container:

First we see fairly obvious cataloging information:

```
xmlescape <?xml version="1.0" encoding="UTF-8" standalone="yes"?> <geronimo-plugin xmlns="http://geronimo.apache.org/xml/ns/plugins-1.3" xmlns:ns2="http://geronimo.apache.org/xml/ns/attributes-1.2"> <name>Geronimo Configs :: Jetty 6</name> <category>Jetty</category> <description>Geronimo Jetty Web Server integration.</description> <url>http://geronimo.apache.org/</url> <author>The Apache Geronimo development community</author> <license osi-approved="true">The Apache Software License, Version 2.0</license>
```

Each `geronimo-plugin.xml` can specify information for many versions of the "same" plugin, so the **plugin-artifact** element specifying information for one version can occur multiple times. Here there is just one. First we see the plugin **moduleid** and the list of dependencies that will be installed if not already present.

```
xmlescape <plugin-artifact> <module-id> <groupid>org.apache.geronimo.configs</groupid> <artifactId>jetty6</artifactId> <version>2.1-SNAPSHOT</version> <type>car</type> </module-id> <geronimo-version>2.1-SNAPSHOT</geronimo-version> <jvm-version>1.5</jvm-version> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>j2ee-server</artifactId> <version>2.1-SNAPSHOT</version> <type>car</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>server-security-config</artifactId> <version>2.1-SNAPSHOT</version> <type>car</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>transaction</artifactId> <version>2.1-SNAPSHOT</version> <type>car</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.modules</groupid> <artifactId>geronimo-jetty6</artifactId> <version>2.1-SNAPSHOT</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>clustering</artifactId> <version>2.1-SNAPSHOT</version> <type>car</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>slf4j-api</artifactId> <version>1.4.3</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>slf4j-jcl</artifactId> <version>1.4.3</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.mortbay.jetty</groupid> <artifactId>jetty</artifactId> <version>6.1.5</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.mortbay.jetty</groupid> <artifactId>jetty-ajp</artifactId> <version>6.1.5</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.mortbay.jetty</groupid> <artifactId>jetty-sslengine</artifactId> <version>6.1.5</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.mortbay.jetty</groupid> <artifactId>jetty-util</artifactId> <version>6.1.5</version> <type>jar</type> </dependency> <dependency start="true"> <groupid>org.apache.geronimo.configs</groupid> <artifactId>webservices-common</artifactId> <version>2.1-SNAPSHOT</version> <type>car</type> </dependency>
```

Now we see the list of repositories this plugin is expected to be available from. We normally include the local maven repository to make developing plugins easier.

```
xmlescape <source-repository>~/m2/repository/</source-repository> <source-repository>http://repo1.maven.org/maven2/</source-repository> <source-repository>http://people.apache.org/repo/m2-snapshot-repository/</source-repository> <source-repository>http://people.apache.org/repo/m2-incubating-repository/</source-repository>
```

Here we see the prototype for plugin customization. The `config.xml` file has a section for each module or plugin it knows about and the contents of the **config-xml-content** in `geronimo-plugin.xml` are copied into such an element in `config.xml`. Note the use of substitution variables such as `$(ServerHost)`.

```
xmlescape <config-xml-content> <ns2:gbean name="JettyWebConnector"> <ns2:attribute name="host">$(ServerHost)</ns2:attribute> <ns2:attribute name="port">$(HTTPPort + PortOffset)</ns2:attribute> <ns2:attribute name="redirectPort">$(HTTPSPortPrimary + PortOffset)</ns2:attribute> </ns2:gbean> <ns2:gbean name="JettyAJP13Connector"> <ns2:attribute name="host">$(ServerHost)</ns2:attribute> <ns2:attribute name="port">$(AJPPort + PortOffset)</ns2:attribute> <ns2:attribute name="redirectPort">$(HTTPSPortPrimary + PortOffset)</ns2:attribute> </ns2:gbean> <ns2:gbean name="JettySSLConnector"> <ns2:attribute name="host">$(ServerHost)</ns2:attribute> <ns2:attribute name="port">$(HTTPSPort + PortOffset)</ns2:attribute> </ns2:gbean> </config-xml-content>
```

Here we see the default values of the substitution variables. These are copied into the `config-substitutions.properties` file; you are expected to modify these by hand as necessary.

```
xmlescape <config-substitution key="HTTPPort">8080</config-substitution> <config-substitution key="AJPPort">8009</config-substitution> <config-substitution key="HTTPSPort">8443</config-substitution> <config-substitution key="ServerHost">0.0.0.0</config-substitution> <config-substitution key="webcontainer">JettyWebContainer</config-substitution> <config-substitution key="webcontainerName">jetty6</config-substitution>
```

Missing from this example is the **artifact-alias** element which can be used to replace one plugin by another. For instance you can switch databases by deploying **postgres-system-database** and specifying **artifact-alias key="org.apache.geronimo.configs/system-database/2.1-SNAPSHOT/car">org.apache.geronimo.configs/postgres-system-database/2.1-SNAPSHOT/car</artifact-alias>**

```
xmlescape </plugin-artifact> </geronimo-plugin>
```

One of the more obvious parts of Geronimo is the repository which contains jars as well as plugins. However the plugins by themselves don't do anything; we need some information about which ones to start and how to customize them in order to get a functioning server. This kind of information is normally stored in configuration files in the `var/config` directory such as `config.xml`, `config-substitutions.properties` and `artifact_aliases.properties`. There are several "servers" you can start in a normal Geronimo installation, such as the "server", the app client container, the deployer, and the jsr88 tool. The plugin system abstracts this idea of a "server instance" with a **ServerInstance** gbean that specifies the attribute store (relating to the `config.xml` and `config-substitutions.xml` files) and artifact resolver (relating to the `artifact_aliases.properties` file). So the plugin system requires that you set up **ServerInstances** for all the kinds of servers you expect to start in a Geronimo installation. For instance, the normal Geronimo setup includes these:

```
xmlsolid <gbean name="DefaultServer" class="org.apache.geronimo.system.plugin.ServerInstance"> <attribute name="serverName">default</attribute>
<reference name="PluginAttributeStore"> <name>AttributeManager</name> </reference> <reference name="ArtifactResolver"> <name>ArtifactResolver<
/attribute> </reference> </gbean> <gbean name="Offline" class="org.apache.geronimo.system.plugin.ServerInstance"> <attribute name="serverName"
>offline</attribute> <reference name="PluginAttributeStore"> <name>OfflineAttributeManager</name> </reference> <reference name="ArtifactResolver">
<name>ArtifactResolver</name> </reference> </gbean> <gbean name="OfflineAttributeManager" class="org.apache.geronimo.system.configuration.
LocalAttributeManager"> <reference name="ServerInfo"> <name>ServerInfo</name> </reference> <attribute name="readOnly">true</attribute> <attribute
name="configFile">var/config/offline-deployer-config.xml</attribute> <attribute name="substitutionsFile">var/config/config-substitutions.properties<
/attribute> <attribute name="substitutionPrefix">org.apache.geronimo.config.substitution.</attribute> </gbean> <gbean name="Client" class="org.apache.
geronimo.system.plugin.ServerInstance"> <attribute name="serverName">client</attribute> <reference name="PluginAttributeStore">
<name>AttributeManager</name> </reference> <reference name="ArtifactResolver"> <name>ClientArtifactResolver</name> </reference> </gbean>
<gbean name="ClientArtifactResolver" class="org.apache.geronimo.system.resolver.ExplicitDefaultArtifactResolver"> <reference name="ArtifactManager"
> <name>ArtifactManager</name> </reference> <reference name="Repositories"></reference> <attribute name="versionMapLocation">var/config
/client_artifact_aliases.properties</attribute> <reference name="ServerInfo"> <name>ServerInfo</name> </reference> </gbean> <gbean name="Jsr88"
class="org.apache.geronimo.system.plugin.ServerInstance"> <attribute name="serverName">jsr88</attribute> <reference name="PluginAttributeStore">
<name>Jsr88AttributeManager</name> </reference> <reference name="ArtifactResolver"> <name>ArtifactResolver</name> </reference> </gbean>
<gbean name="Jsr88AttributeManager" class="org.apache.geronimo.system.configuration.LocalAttributeManager"> <reference name="ServerInfo">
<name>ServerInfo</name> </reference> <attribute name="readOnly">true</attribute> <attribute name="configFile">var/config/jsr88-configurer-config.xml<
/attribute> <attribute name="substitutionsFile">var/config/config-substitutions.properties</attribute> <attribute name="substitutionPrefix">org.apache.
geronimo.config.substitution.</attribute> </gbean>
```

By default, plugins are installed into the default server instance. If you need to install into a different instance you can specify this in the **config-xml-content**, **config-substitution**, and **artifact-alias** elements. Here's an example from **client-transaction**, showing how it redirects any dependencies to the server transaction plugin to itself.

```
xmlsolid <artifact-alias server="client" key="org.apache.geronimo.configs/transaction//car">org.apache.geronimo.configs/client-transaction/2.1-SNAPSHOT
/car</artifact-alias> <artifact-alias server="client" key="org.apache.geronimo.configs/transaction/2.1-SNAPSHOT/car">org.apache.geronimo.configs/client-
transaction/2.1-SNAPSHOT/car</artifact-alias>
```

## Plugins group

[Plugin group](#)

Look into [Administering plugins](#) on how to manage a plugin.