

Configuring Virtual Host in Tomcat

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This article shows how to configure Virtual Hosts in Apache Geronimo with Tomcat.

By default, when you deploy and start an application in Geronimo, that application will be listening on every available host name. By configuring a virtual host you can make an application listen on a specific host name or IP. The configuration steps described in this article are also valid when you are sharing a single IP among several host names.

To configure a virtual host in Geronimo you basically need to:

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This article used the simple HelloWorld application as a reference, this application is covered in the [Quick start - Apache Geronimo for the impatient](#) section.

Configure local host or DNS

To make this configuration work you need to ensure that Geronimo can resolve the virtual host name you are about to define. Depending on your network configuration you can add an entry to you DNS, an alias to the Geronimo server IP. Alternatively you can add an entry to the local host table, each operating system has its own way to define a local host table. For example Windows will have %SystemRoot%\system32\drivers\etc\hosts, UNIX based operating systems would normally have an /etc/hosts.

For this example we will be using the following host names defined in the local host table:

127.0.0.1 localhost virtualhost1.com virtualhost2.com virtualhost3.com virtualhost4.com

Make sure your system can resolve these names.

Define Virtual host

Now you need to define those virtual hosts in Geronimo's config.xml so that Geronimo can recognize them. This section provides two different virtual host definitions, that is creating two new **HostGBean** (*TomcatVirtualHost1* and *TomcatVirtualHost2*) in the Geronimo configuration, one of which will have multiple host names aliases. The goal of this example is to have an application listening on a single virtual host (this will be virtualhost1.com) and another application listening on a different virtual host (this will be virtualhost2.com) with two additional aliases (this will be virtualhost3.com and virtualhost4.com).

Open the config.xml file located in the <geronimo_home>/var directory and look for the following line <module name="org.apache.geronimo.configs/tomcat6/2.2/car">. This is the beginning of the Tomcat configuration module. All the additional virtual host configuration will be done immediately after this line.

To define the first HostGBean **TomcatVirtualHost_1** add the following lines right after <module name="org.apache.geronimo.configs/tomcat6/2.2/car">.

```
xmlsolidExcerpt from config.xml ... <gbean gbeanInfo="org.apache.geronimo.tomcat.HostGBean" name="org.apache.geronimo.configs/tomcat6/2.2/car?
ServiceModule=org.apache.geronimo.configs/tomcat6/2.2/car.j2eeType=Host,name=TomcatVirtualHost_1"> <attribute name="className">org.apache.
catalina.core.StandardHost</attribute> <attribute name="initParams">name=virtualhost1.com appBase= workDir=work</attribute> <reference name="
Engine"> <pattern> <name>TomcatEngine</name> </pattern> </reference> </gbean> ...
```

To add the second HostGBean **TomcatVirtualHost_2** add the following lines right after the first HostGBean. These two HostGBeans have been split so it is easier to identify them. The main difference between these two is the <attribute name="aliases">...</attribute> line to define the aliases.

```
xmlsolidExcerpt from config.xml ... <gbean gbeanInfo="org.apache.geronimo.tomcat.HostGBean" name="org.apache.geronimo.configs/tomcat6/2.2/car?
ServiceModule=org.apache.geronimo.configs/tomcat6/2.2/car.j2eeType=Host,name=TomcatVirtualHost_2"> <attribute name="className">org.apache.
catalina.core.StandardHost</attribute> <attribute name="initParams">name=virtualhost2.com appBase= workDir=work</attribute> <attribute name="
aliases">virtualhost3.com,virtualhost4.com</attribute> <reference name="Engine"> <pattern> <name>TomcatEngine</name> </pattern> </reference> <
/gbean> ...
```

At this point you have successfully configured two different virtual hosts in Geronimo. Make sure you save the changes to the config.xml file and [start](#) Geronimo.

For additional reference, this is an excerpt from config.xml of the entire <module name="org.apache.geronimo.configs/tomcat6/2.2/car"> entry with the two **HostGBean** already defined.

```
xmlsolidconfig.xml <?xml version="1.0" encoding="UTF-8" standalone="yes"?> <attributes xmlns:ns2="http://geronimo.apache.org/xml/ns/plugins-1.3"
xmlns="http://geronimo.apache.org/xml/ns/attributes-1.2"> <comment>
===== Warning - This XML file is regenerated by Geronimo whenever
changes are made to Geronimo's configuration. If you want to include comments, create a single comment element element. They are allowable at any
level of the configuration. !!!! Do not edit this file while Geronimo is running !!!!
===== </comment> <module name="org.apache.geronimo.framework
/j2ee-security/2.2/car"> <gbean name="JMXService"> <attribute name="protocol">rmi</attribute> <attribute name="host">${ServerHostname}</attribute>
<attribute name="port">${JMXPort + PortOffset}</attribute> <attribute name="urlPath">/jndi/rmi:/${ServerHostname}:${NamingPort + PortOffset}
/JMXConnector</attribute> </gbean> </module> <module name="org.apache.geronimo.framework/rmi-naming/2.2/car"> <gbean name="RMIRegistry">
<attribute name="port">${NamingPort + PortOffset}</attribute> </gbean> <gbean name="NamingProperties"> <attribute name="namingProviderUrl"
>rmi:/${ServerHostname}:${NamingPort + PortOffset}</attribute> </gbean> <gbean name="DefaultThreadPool"> <attribute name="keepAliveTime"
```

>30000</attribute> <attribute name="minPoolSize">\${MinThreadPoolSize}</attribute> <attribute name="maxPoolSize">\${MaxThreadPoolSize}</attribute>
</gbean> </module> <module name="org.apache.geronimo.framework/j2ee-system/2.2/car"> <module name="org.apache.geronimo.framework/jee-specs/2.2/car"> <module name="org.apache.geronimo.framework/shutdown/2.2/car" load="false"> <module name="org.apache.geronimo.framework/client-system/2.2/car" load="false"> <module name="org.apache.geronimo.framework/online-deployer/2.2/car" load="false"> <module name="org.apache.geronimo.framework/transformer-agent/2.2/car"> <module name="org.apache.geronimo.framework/server-security-config/2.2/car"> <module name="org.apache.geronimo.framework/plugin/2.2/car"> <gbean name="DownloadedPluginRepos"> <attribute name="repositoryList">http://geronimo.apache.org/plugins/plugin-repository-list-2.2.txt</attribute> <attribute name="userRepositories">~/m2/repository</attribute> </gbean> </module> <module name="org.apache.geronimo.framework/xmlbeans/2.2/car"> <module name="org.apache.geronimo.configs/myfaces-deployer/2.2/car"> <module name="org.apache.geronimo.configs/myfaces/2.2/car"> <module name="org.apache.geronimo.configs/j2ee-server/2.2/car"> <module name="org.apache.geronimo.configs/j2ee-deployer/2.2/car"> <gbean name="WebBuilder"> <attribute name="defaultNamespaces">http://geronimo.apache.org/xml/ns/j2ee/web/jetty-2.0</attribute> </gbean> <gbean name="EnvironmentEntryBuilder"> <attribute name="eeNamespaces">http://java.sun.com/xml/ns/j2ee,http://java.sun.com/xml/ns/javaee</attribute> </gbean> </module> <module name="org.apache.geronimo.framework/geronimo-gbean-deployer/2.2/car"> <gbean name="Deployer"> <attribute name="remoteDeployAddress">http://\${RemoteDeployHostName}:\${HTTPPort + PortOffset}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/activemq-ra/2.2/car"> <gbean name="ActiveMQ RA"> <attribute name="ServerUrl">tcp://\${ServerHostName}:\${ActiveMQPort + PortOffset}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/activemq-broker/2.2/car"> <gbean name="ActiveMQ.tcp.default"> <attribute name="host">\${ServerHostName}</attribute> <attribute name="port">\${ActiveMQPort + PortOffset}</attribute> </gbean> <gbean name="ActiveMQ.stomp.default"> <attribute name="host">\${ServerHostName}</attribute> <attribute name="port">\${ActiveMQStompPort + PortOffset}</attribute> </gbean> <module name="org.apache.geronimo.configs/system-database/2.2/car"> <gbean name="DerbyNetwork"> <attribute name="host">\${ServerHostName}</attribute> <attribute name="port">\${DerbyPort + PortOffset}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/transaction/2.2/car"> <gbean name="ResourceBindings"> <attribute name="format">\${ResourceBindingsFormat}</attribute> <attribute name="nameInNamespaces">\${ResourceBindingsNameInNamespaces}</attribute> <attribute name="namePattern">\${ResourceBindingsNamePattern}</attribute> <attribute name="abstractNameQuery">\${ResourceBindingsQuery}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/uddi-tomcat/2.2/car"> <module name="org.apache.geronimo.configs/axis/2.2/car"> <module name="org.apache.geronimo.configs/webservices-common/2.2/car"> <module name="org.apache.geronimo.configs/openejb/2.2/car"> <gbean name="EJBNetworkService"> <attribute name="port">\${OpenEJBPort + PortOffset}</attribute> <attribute name="host">\${ServerHostName}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/openjpa/2.2/car"> <module name="org.apache.geronimo.configs/jasper/2.2/car"> <module name="org.apache.geronimo.configs/tomcat6/2.2/car"> <!-- Virtual Host 1 definition --> <gbean name="org.apache.geronimo.configs/tomcat6/2.2/car?ServiceModule=org.apache.geronimo.configs/tomcat6/2.2/car,j2eeType=Host,name=TomcatVirtualHost_1" gbeanInfo="org.apache.geronimo.tomcat.HostGBean"> <attribute name="className">org.apache.catalina.core.StandardHost</attribute> <attribute name="initParams">name=virtualhost1.com appBase=workDir=work</attribute> <reference name="Engine"> <pattern> <name>TomcatEngine</name> </pattern> </reference> </gbean> <!-- Virtual Host 2 and aliases definition --> <gbean name="org.apache.geronimo.configs/tomcat6/2.2/car?ServiceModule=org.apache.geronimo.configs/tomcat6/2.2/car,j2eeType=Host,name=TomcatVirtualHost_2" gbeanInfo="org.apache.geronimo.tomcat.HostGBean"> <attribute name="className">org.apache.catalina.core.StandardHost</attribute> <attribute name="initParams">name=virtualhost2.com appBase=workDir=work</attribute> <attribute name="aliases">virtualhost3.com,virtualhost4.com</attribute> <reference name="Engine"> <pattern> <name>TomcatEngine</name> </pattern> </reference> </gbean> </module> <module name="org.apache.geronimo.configs/connector-deployer/2.2/car"> <gbean name="ResourceRefBuilder"> <attribute name="eeNamespaces">http://java.sun.com/xml/ns/j2ee,http://java.sun.com/xml/ns/javaee</attribute> <attribute propertyEditor="org.apache.geronimo.deployment.service.EnvironmentBuilder" name="corbaEnvironment"> <environment:environment xmlns:environment="http://geronimo.apache.org/xml/ns/deployment-1.2"> <environment:dependencies> <environment:dependency> <environment:groupid>org.apache.geronimo.configs</environment:groupid> <environment:artifactId>j2ee-corba-yoko</environment:artifactId> <environment:type>car</environment:type> </environment:dependency> </environment:dependencies> </environment:environment></attribute> </gbean> <gbean name="AdminObjectRefBuilder"> <attribute name="eeNamespaces">http://java.sun.com/xml/ns/j2ee,http://java.sun.com/xml/ns/javaee</attribute> </gbean> <gbean name="ClientResourceRefBuilder"> <attribute name="eeNamespaces">http://java.sun.com/xml/ns/j2ee,http://java.sun.com/xml/ns/javaee</attribute> <attribute propertyEditor="org.apache.geronimo.deployment.service.EnvironmentBuilder" name="corbaEnvironment"> <environment:environment xmlns:environment="http://geronimo.apache.org/xml/ns/deployment-1.2"> <environment:dependencies> <environment:dependency> <environment:groupid>org.apache.geronimo.configs</environment:groupid> <environment:artifactId>client-corba-yoko</environment:artifactId> <environment:type>car</environment:type> </environment:dependency> </environment:dependencies> </environment:environment></attribute> </gbean> </module> <module name="org.apache.geronimo.configs/axis2/2.2/car"> <module name="org.apache.geronimo.configs/jasper-deployer/2.2/car"> <module name="org.apache.geronimo.configs/remote-deploy-tomcat/2.2/car"> <module name="org.apache.geronimo.configs/client-security/2.2/car" load="false"> <module name="org.apache.geronimo.configs/client/2.2/car" load="false"> <module name="org.apache.geronimo.configs/axis2-ejb-deployer/2.2/car" condition="props[org.apache.geronimo.jaxws.provider] == 'axis2' or (props[org.apache.geronimo.jaxws.provider] == null and webcontainerName == 'tomcat6')"> <gbean name="Axis2ModuleBuilderExtension"> <attribute name="listener">?name=\${webcontainer}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/jaxws-ejb-deployer/2.2/car"> <module name="org.apache.geronimo.configs/jaxws-deployer/2.2/car"> <module name="org.apache.geronimo.configs/openejb-deployer/2.2/car"> <gbean name="EjbRefBuilder"> <attribute name="eeNamespaces">http://java.sun.com/xml/ns/j2ee,http://java.sun.com/xml/ns/javaee</attribute> </gbean> <gbean name="ClientEjbRefBuilder"> <attribute name="eeNamespaces">http://java.sun.com/xml/ns/j2ee,http://java.sun.com/xml/ns/javaee</attribute> <attribute name="host">\${ServerHostName}</attribute> <attribute name="port">\${OpenEJBPort + PortOffset}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/axis2-deployer/2.2/car" condition="props[org.apache.geronimo.jaxws.provider] == 'axis2' or (props[org.apache.geronimo.jaxws.provider] == null and webcontainerName == 'tomcat6')"> <module name="org.apache.geronimo.configs/axis2-ejb/2.2/car"> <module name="org.apache.geronimo.configs/ca-helper-tomcat/2.2/car"> <module name="org.apache.geronimo.plugins/agent/2.2/car"> <module name="org.apache.geronimo.plugins/agent-ds/2.2/car"> <module name="org.apache.geronimo.configs/mejb/2.2/car"> <module name="org.apache.geronimo.configs/tomcat6-clustering-builder-wadi/2.2/car"> <gbean name="TomcatClusteringBuilder"> <attribute name="defaultSweepInterval">\${DefaultWadiSweepInterval}</attribute> <attribute name="defaultNumPartitions">\${DefaultWadiNumPartitions}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/tomcat6-deployer/2.2/car"> <module name="org.apache.geronimo.configs/tomcat6-clustering-wadi/2.2/car" load="false"> <module name="org.apache.geronimo.configs/wadi-clustering/2.2/car" load="false"> <gbean name="DefaultBackingStrategyFactory"> <attribute name="nbReplica">\${ReplicaCount}</attribute> </gbean> <gbean name="DefaultDispatcherHolder"> <attribute name="endPointURI">\${EndPointURI}</attribute> <attribute name="clusterName">\${ClusterName}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/clustering/2.2/car"> <gbean name="Node"> <attribute name="nodeName">\${clusterNodeName}</attribute> </gbean> </module> <module name="org.apache.geronimo.plugins/debugviews-console-tomcat/2.2/car"> <module name="org.apache.geronimo.plugins/console-tomcat/2.2/car"> <module name="org.apache.geronimo.plugins/pluto-support/2.2/car"> <module name="org.apache.geronimo.configs/spring/2.2/car"> <module name="org.apache.geronimo.configs/dojo-legacy-tomcat/2.2/car"> <module name="org.apache.geronimo.configs/persistence-jpa10-deployer/2.2/car"> <gbean name="PersistenceUnitBuilder"> <attribute name="defaultPersistenceProviderClassName">org.apache.openjpa.persistence.PersistenceProviderImpl</attribute> <attribute name="defaultPersistenceUnitProperties">openjpa.Log=commons.openjpa.jdbc.SynchronizeMappings=buildSchema(ForeignKeys=true) openjpa.jdbc.UpdateManager=operation-order openjpa.Sequence=table(Table=OPENJPASEQ, Increment=100)</attribute> <attribute propertyEditor="org.apache.geronimo.deployment.service.EnvironmentBuilder" name="defaultEnvironment"> <environment:environment xmlns:environment="http://geronimo.apache.org/xml/ns/deployment-1.2"> <environment:dependencies> <environment:dependency> <environment:groupid>org.apache.geronimo.configs</environment:groupid> <environment:artifactId>openjpa</environment:artifactId> <environment:type>car</environment:type> </environment:dependency> </environment:dependencies> </environment:environment></attribute> </gbean> </module> <module name="org.apache.geronimo.plugins/plugin-console-tomcat/2.2/car"> <module name="org.apache.geronimo.plugins/plancreator-console-tomcat/2.2/car"> <module name="org.apache.geronimo.framework/upgrade-cli/2.2/car" load="false"> <module name="org.apache.geronimo.configs/axis-deployer/2.2/car"> <gbean name="AxisModuleBuilderExtension"> <attribute name="listener">?name=\${webcontainer}</attribute> <attribute propertyEditor="org.apache.geronimo.

```

deployment.service.EnvironmentBuilder" name="defaultEnvironment"> <environment:environment xmlns:environment="http://geronimo.apache.org/xml/ns/deployment-1.2"> <environment:dependencies> <environment:dependency> <environment:groupId>org.apache.geronimo.configs</environment:groupId> <environment:artifactId>${webcontainerName}</environment:artifactId> <environment:type>car</environment:type> </environment:dependency> </environment:dependencies> </environment:environment></attribute> </gbean> </module> <module name="org.apache.geronimo.configs/j2ee-corba-yoko/2.2/car"> <gbean name="NameServer"> <attribute name="port">${COSNamingPort + PortOffset}</attribute> <attribute name="host">${COSNamingHost}</attribute> </gbean> <gbean name="Server"> <attribute name="port">${ORBSSLPort + PortOffset}</attribute> <attribute name="host">${ORBSSLHost}</attribute> </gbean> <gbean name="UnprotectedServer"> <attribute name="port">${ORBPport + PortOffset}</attribute> <attribute name="host">${ORBHost}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/hot-deployer/2.2/car"> <gbean name="HotDeployer"> <attribute name="path">deploy</attribute> <attribute name="pollIntervalMillis">2000</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/farming/2.2/car" load="false"> <gbean name="NodeInfo"> <attribute name="name">${clusterNodeName}</attribute> </gbean> <gbean name="ClusterInfo"> <attribute name="name">${clusterName}</attribute> </gbean> </module> <module name="org.apache.geronimo.plugins/sysdb-console-tomcat/2.2/car"> <module name="org.apache.geronimo.framework/offline-deployer/2.2/car" load="false"/> <module name="org.apache.geronimo.configs/opejib-corba-deployer/2.2/car"> <module name="org.apache.geronimo.plugins/activemq-console-tomcat/2.2/car"> <module name="org.apache.geronimo.configs/client-corba-yoko/2.2/car" load="false"/> <module name="org.apache.geronimo.configs/javamail/2.2/car"> <gbean name="SMTPTransport"> <attribute name="host">${SMTPHost}</attribute> <attribute name="port">${SMTPPort + PortOffset}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/cxf-deployer/2.2/car" condition="(props['org.apache.geronimo.jaxws.provider'] == 'cxf' or (props['org.apache.geronimo.jaxws.provider'] == null and webcontainerName == 'jetty6'))"/> <module name="org.apache.geronimo.configs/cxf/2.2/car"> <module name="org.apache.geronimo.configs/welcome-tomcat/2.2/car"> <module name="org.apache.geronimo.configs/sharedlib/2.2/car"> <module name="org.apache.geronimo.plugins/mconsole-tomcat/2.2/car"> <module name="org.apache.geronimo.plugins/mconsole-ds/2.2/car"> <module name="org.apache.geronimo.configs/client-deployer/2.2/car"> <module name="org.apache.geronimo.configs/client-transaction/2.2/car" load="false"/> <module name="org.apache.geronimo.configs/cxf-ejb-deployer/2.2/car" condition="(props['org.apache.geronimo.jaxws.provider'] == 'cxf' or (props['org.apache.geronimo.jaxws.provider'] == null and webcontainerName == 'jetty6'))"> <gbean name="CXFModuleBuilderExtension"> <attribute name="listener">?name=${webcontainer}</attribute> </gbean> </module> <module name="org.apache.geronimo.configs/cxf-ejb/2.2/car"> <module name="org.apache.geronimo.configs/dojo-tomcat/2.2/car"> <module name="org.apache.geronimo.configs/jsr88-ear-configurer/2.2/car" load="false"/> <module name="org.apache.geronimo.configs/jsr88-jar-configurer/2.2/car" load="false"/> <module name="org.apache.geronimo.configs/jsr88-war-configurer/2.2/car" load="false"/> <module name="org.apache.geronimo.framework/jsr88-deploymentfactory/2.2/car" load="false"/> </attributes>

```

Note: Some tags in the config.xml shown above are presented in multiple lines for displaying purposes only.

Declare the virtual host in the deployment plan

As mentioned before, for this example we are using the HelloWorld sample application covered in the [Quick start - Apache Geronimo for the impatient](#) section. Since this is a Web application, the deployment plan that we are modifying is the geronimo-web.xml. If you use a different type of application you may need to modify a different deployment plan, for example geronimo-application.xml.

In the previous section we defined two Virtual Hosts, now we will be configuring two applications so they can be deployed to those Virtual Hosts exclusively.

We will use the same application in both cases but will differentiate one deployment from the other by giving it a different **artifactId**, this way we avoid modifying the code but still can identify each deployment.

Assuming you followed the steps covered in the [Quick start - Apache Geronimo for the impatient](#) section you should have the following structure:

```
solid <APP_HOME>\ + HelloWorld.jsp + WEB-INF\ + geronimo-web.xml + web.xml
```

Open the geronimo-web.xml file and edit the **artifactId** and **context-root** to make this deployment unique. Within the **<web-app>** section add the **host** attribute and specify the Virtual Host you want this application to listen on, in this case virtualhost1.com.

```

xmllsolidgeronimo-web.xml for HelloWorld_1 <?xml version="1.0" encoding="UTF-8"?> <web-app xmlns="http://geronimo.apache.org/xml/ns/j2ee/web-1.2" > <environment> <moduleId> <groupId>sample.applications</groupId> <artifactId>HelloWorldApp_1</artifactId> <version>2.2</version> <type>war</type> </moduleId> </environment> <context-root>/hello_1</context-root> <host>virtualhost1.com</host> </web-app>

```

Save the changed to the geronimo-web.xml file and generate a WAR file by typing the following command from the <APP_HOME> directory:

```
jar -cvf HelloWorld_1.war *
```

Once deployed this application should only listed in the **virtualhost1.com** host name.

We will now repeat this steps to create a second WAR. Edit once again the geronimo-web.xml file and copy the content form the following example. Note that we are only changing the **<artifactId>**, **<context-root>** and **<host>**.

```

xmllsolidgeronimo-web.xml for HelloWorld_2 <?xml version="1.0" encoding="UTF-8"?> <web-app xmlns="http://geronimo.apache.org/xml/ns/j2ee/web-1.2" > <environment> <moduleId> <groupId>sample.applications</groupId> <artifactId>HelloWorldApp_2</artifactId> <version>2.2</version> <type>war</type> </moduleId> </environment> <context-root>/hello_2</context-root> <host>virtualhost2.com</host> </web-app>

```

Save the changed to the geronimo-web.xml file and generate a second WAR file by typing the following command from the <APP_HOME> directory:

```
*jar -cvf HelloWorld_2.war *
```

You now have two applications ready to be deployed to two different virtual hosts.

Deploy the application

At this point you have configured Geronimo to use two different Virtual Hosts, one of them is also configured to listen under additional aliases. All you need to do now is to deploy the applications and test them. To deploy the applications type the following commands from the <GERONIMO_HOME>\bin directory:

```
deploy --user system --password manager deploy <APP_HOME>\HelloWorld_1.war
```

You should get a successful confirmation message similar to this one:

Repeat the deployment for the second application.

```
deploy --user system --password manager deploy <APP_HOME>\HelloWorld_2.war
```

You should get a successful confirmation message similar to this one:

With the applications deployed the only thing left is to test them. Test **hello_1** first, try to access the hosts names defined on the Geronimo server machine:

Host name / Virtual Host	Access
http://localhost:8080/hello_1	Fail
http://virtualhost1.com:8080/hello_1	SUCCESS!!!
http://virtualhost2.com:8080/hello_1	Fail
http://virtualhost3.com:8080/hello_1	Fail
http://virtualhost4.com:8080/hello_1	Fail

Now repeat the tests for **hello_2**.

Host name / Virtual Host	Access
http://localhost:8080/hello_2	Fail
http://virtualhost1.com:8080/hello_2	Fail
http://virtualhost2.com:8080/hello_2	SUCCESS!!!
http://virtualhost3.com:8080/hello_2	SUCCESS!!!
http://virtualhost4.com:8080/hello_2	SUCCESS!!!

Congratulations!!! you have successfully configured and deployed two applications to two different virtual hosts and aliases.