

## Lab 4: 3 Approaches to Web Services Deployment

Lab objectives:

- Setting up environment for building web services with AXIS;
- Getting familiar with building and deploying web services;

### ***Setting up JDK (same as on Lab 1)***

For the labs: the only applicable JDK will be 1.5.0. You can download prepared package from our site:

<http://zaval.org/resources/training/web-services/>

Unzip content of the archive to `c:\public` (on Windows) or `/tmp` (on Linux).

### ***Setting up Environment Variables***

1. Save previously set variables (if any) and restore them at the end of the lesson.
2. Setup the following environment variables:

Windows (System properties -> Advanced -> Environment variables):

```
JAVA_HOME = c:\jdk
CLASSPATH = .;%JAVA_HOME%\lib;%JAVA_HOME%\jre\lib;
PATH = %JAVA_HOME%\bin
```

Linux (execute the following commands):

```
export JAVA_HOME=/tmp/jdk
export CLASSPATH=.:$JAVA_HOME/lib:$JAVA_HOME/jre/lib
export PATH=$JAVA_HOME/bin:$PATH
```

Verify the environment with the following commands:

```
java -version
javac -version
```

Both programs should report the same versions: 1.5.X\_0Y (X and Y can be different numbers, but should be the same for both programs)

If something goes wrong check the environment with the following commands:

Windows:

```
echo %JAVA_HOME%
echo %CLASSPATH%
echo %PATH%
```

Linux:

```
echo $JAVA_HOME
echo $CLASSPATH
echo $PATH
```

### ***Downloading Apache AXIS and Apache Tomcat***

There are 2 possible ways:

1. Downloading pre-configured Tomcat+AXIS bundle;
2. Downloading both products from their official sites and further configuration.

To download pre-configured bundle please use the following link (see **Download** section):

<http://zaval.org/resources/training/web-services/lecture4.html>

Download Apache AXIS v1.3.1 (binary) and Tomcat 5.5.12 from their official sites:

<http://mirror.tomato.it/apache/tomcat/tomcat-5/v5.5.16/bin/apache-tomcat-5.5.16.zip>  
[http://mirror.tomato.it/apache/ws/axis/1\\_3/](http://mirror.tomato.it/apache/ws/axis/1_3/)

Unzip the archives to c:\public (on Windows) or /tmp (on Linux).

On Linux only – execute the following commands:

```
cd /tmp/tomcat-5.5.XX/bin
chmod +x ./*.sh
```

## **Configuring Apache AXIS and Apache Tomcat**

This section is useful only for those who decided to configure products themselves.

Cleaning up Tomcat installation:

- 1) Delete all directories and their content under tomcat-5.5.XX/webapps/ directory.
- 2) Delete everything under tomcat-5.5.XX/conf/Catalina/localhost/ directory.
- 3) Delete existing tomcat-5.5.XX/conf/server.xml file and create new one with the following content:

```
<Server port="8005" shutdown="SHUTDOWN">

  <GlobalNamingResources>
    <Resource name="UserDatabase" auth="Container"
      type="org.apache.catalina.UserDatabase"
      description="User database that can be updated and saved"
      factory="org.apache.catalina.users.MemoryUserDatabaseFactory"
      pathname="conf/tomcat-users.xml" />
  </GlobalNamingResources>

  <Service name="Catalina">
    <Connector port="8080" />

    <Engine name="Catalina" defaultHost="localhost">
      <Realm className="org.apache.catalina.realm.UserDatabaseRealm"
        resourceName="UserDatabase" />
      <Host name="localhost" appBase="webapps" />
    </Engine>
  </Service>
</Server>
```

This means Tomcat will be serving content on your local PC on port 8080.

Test Tomcat / AXIS configuration:

Windows:

```
c:
cd public\tomcat-5.5.XX\bin
startup.bat
```

Linux:

```
cd /tmp/tomcat-5.5.XX/bin
./startup.sh
```

Open your favorite web browser, go to proxy configuration page:

Microsoft IE:

Tools -> Internet Options -> Connections -> Lan Settings:

- 1) Make sure "Automatically detect settings" option is turned off.
- 2) Either Use proxy server is turned off or Bypass proxy server for local addresses is turned on (in second case click on Advanced and make

sure there is the following string in Exceptions window:  
"127.0.0.1;localhost;" (without quotation)).

Other browsers:

Please find analogues of what is described for IE above in your favorite browser.

Go to web page:

<http://localhost:8080/axis/>

If you see AXIS welcome page the configuration was done correctly till now.

### ***Preparing AXIS Scripts***

This section is useful only for those who decided to configure products themselves.

Please read:

<http://wiki.apache.org/ws/FrontPage/Axis/UsingCommandLineTools>

### ***Building and Deploying Web Services***

Please read ddj\_axis.pdf and follow the instructions.