



EvaJ Admin Guide

This document contains the EvaJ Admin Guide. It explains in detail, how to install the evaluation system EvaJ that is currently used at the Hasso-Plattner-Institute for IT system engineering.

This document tells you how to install a Java Runtime Environment under the Debian Linux operating system, how to install and configure the required Apache Web Server with Kerberos support, how to install and configure the required Apache Tomcat servlet engine so that it can be used with the Apache Web Server, and, finally, how to install and configure the required MySQL database.

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1 Preliminaries

As EvaJ is implemented in Java, it can theoretically run on any platform that supports a Java 1.5 compliant Virtual Machine. However, the targeted productive environment for EvaJ is Linux. This guide assumes that you use a Debian Linux distribution, because we find that the installation on Debian is particularly easy. Whenever possible, we chose the “Debian way” of installing software, because this makes updates and removal of software very easy and comprehensive.

If you cannot choose the Linux distribution to run EvaJ on, please read the corresponding installation documentation for the software packages EvaJ requires. Some of the following instructions require that you are root on the machine to install EvaJ on.

2 Installing the JDK

EvaJ is Java software, we therefore need a Java runtime environment. Furthermore, the employed JSP technology relies on a Java compiler and thus, a Java Software Development Kit (JDK) should be installed.

There is a “Debian way” for installing any JRE or JDK which is documented on several places in the internet ([JAVADEBIAN]):

1. Download the latest version of the Sun J2SE Development Kit (JDK). At the time of this writing, the package can be downloaded from [SUNJDK]. Choose the “Download JDK 5.0 Update 6” link and follow the licensing and download instructions written on the following pages. The downloaded file should be named similar to `jdk-1_5_0_06-linux-i586.bin`. Copy it to a location which is easily accessible for you on your server and `chmod` it to it.
2. Create a Debian package. In order to create a Debian package from the JDK installable you just downloaded, you need to install two standard Debian packages. Use the following commands:

```
apt-get update
apt-get install java-common java-package
```

Depending on the version of your Debian distribution you might get an error message saying that `java-package` cannot be installed or found. You can download and install `java-package` manually with the following commands:

```
wget ftp://ftp.de.debian.org/debian/pool/contrib/j/java-package/java-
package_0.27_all.deb
dpkg -i java-package_0.24_all.deb
```

Now you are ready to build the package. Make sure you are root and run:

```
make-jpkg jdk-1_5_0_06-linux-i586.bin
```

Once you accepted Sun’s license terms and the package is built, you can install it using:

```
dpkg -i sun-j2sdk1.5_1.5.0+update06_i386.deb
```

3. Test your Java environment. You can check whether Java is correctly installed on your server using the follow-

ing commands:

```
java -version
```

should display something like

```
java version "1.5.0_06"  
Java(TM) 2 Runtime Environment, Standard Edition (build 1.5.0_06-b05)  
Java HotSpot(TM) Client VM (build 1.5.0_06-b05, mixed mode, sharing)
```

whereas

```
javac -version
```

should output a longer usage manual preceded by something like

```
javac 1.5.0_06
```

You are have now installed a Sun JDK on your server.

3 Installing Tomcat

EvaJ runs on Tomcat, a servlet engine written in Java. EvaJ was tested on Tomcat 5. Please install Tomcat 5 if you can. On Debian, installing Tomcat 5 is as easy as typing:

```
apt-get update  
apt-get install tomcat5 tomcat5-admin
```

Depending on the version of your Debian installation, Apt may fail saying that the tomcat5 package cannot be installed or found. Add the following lines to your `/etc/apt/sources.list` to overcome this issue:

```
# Testing  
deb ftp://ftp.hosteurope.de/mirror/ftp.debian.org/debian/  
testing main contrib non-free  
deb-src ftp://ftp.hosteurope.de/mirror/ftp.debian.org/debian/  
testing main contrib non-free  
  
# Unstable  
deb ftp://ftp.hosteurope.de/mirror/ftp.debian.org/debian/  
unstable main contrib non-free  
deb-src ftp://ftp.hosteurope.de/mirror/ftp.debian.org/debian/  
unstable main contrib non-free
```

You might want to configure and use “apt-pinning”. If you don’t know what “apt-pinning” means, read the corresponding documentation on the internet. Basically a `/etc/apt/preferences` like the following should be fine in most cases:

```
Package: *
```

```
Pin: release a=stable
```

```
Pin-Priority: 700
```

```
Package: *
```

```
Pin: release a=testing
```

```
Pin-Priority: 650
```

```
Package: *
```

```
Pin: release a=unstable
```

```
Pin-Priority: 600
```

4 Installing and configuring Apache 2 with SSL

Apache is the preferred HTTP server for EvaJ. If it is not installed on your server, please install it using Apt typing the following (Refer to [APACHE2SSLDEBIAN] for more information):

```
apt-get update
```

```
apt-get install apache2
```

To create a SSL certificate, type the following:

```
apache2-ssl-certificate
```

Follow the instructions that are displayed on the screen.

Now you have to create a new site configuration for EvaJ. In order to do this, copy the default SSL site configuration file and use it as a template. Type:

```
cp /usr/share/doc/apache2/examples/ssl-std.conf.gz /etc/apache2/sites-  
available/evaj.gz
```

```
gunzip /etc/apache2/sites-available/evaj.gz
```

Create a symbolic link to the sites-enabled directory in order to enable the configuration:

```
ln -s /etc/apache2/sites-available/evaj /etc/apache2/sites-enabled/evaj
```

Use your favourite editor to edit the file /etc/apache2/sites-available/evaj.

Find the line that starts like SSLCertificateFile. Delete or comment it and add:

```
SSLCertificateFile /etc/apache2/ssl/apache.pem
```

Find the line that starts like SSLCertificateKeyFile. Delete or comment it.

5 Installing and configuring mod_auth_kerb for Apache

First, the module has to be installed. This can be done by simply typing:

Installing and configuring mod_jk

```
apt-get install libapache2-mod-auth-kerb
```

Now, you must enable Kerberos Authentication for the EvaJ web site. Place the following lines of configuration code into the VirtualHost stanza of `/etc/apache2/sites-available/evaj` using your favourite editor:

```
KrbMethodNegotiate or
KrbMethodK5Passwd on

KrbAuthRealms HPI.UNI-POTSDAM.DE
Krb5Keytab /etc/apache2/keytab

AuthType Kerberos
AuthName "EvaJ Kerberos Login"
require valid-user
```

Note that you must acquire the URI of your authentication realm from your KDC Administrator and replace `HPI.UNI-POTSDAM.DE` accordingly. Furthermore, you must have acquired a keytab file from your KDC administrators and placed it in the `/etc/apache2` directory.

6 Installing and configuring mod_jk

In order to run Tomcat web applications in an Apache context, which in turn is needed to access the Kerberos authentication information, you must install and configure `mod_jk`.

On Debian, installing is as simple as typing:

```
apt-get update
apt-get install libapache2-mod-jk
```

Now configure Apache such that it uses `mod_jk`. Place the following lines of configuration code into the VirtualHost stanza of `/etc/apache2/sites-available/evaj` using your favourite editor:

```
JkWorkersFile/etc/libapache2-mod-jk/workers.properties
JkLogFile/var/log/apache2/mod_jk.log
JkLogLevelinfo
JkMount/evaj/*worker1
JkEnvVarREMOTE_USER"<UNSET>"
```

Note, that this configuration assumes that EvaJ will run in the `evaj` subdirectory.

After doing so, make sure that there is a file called `/etc/libapache2-mod-jk/workers.properties` with the following contents:

```
# Define 1 real worker using ajp13
worker.list=worker1
# Set properties for worker1 (ajp13)
```

```
worker.worker1.type=ajp13
worker.worker1.host=localhost
worker.worker1.port=8009
worker.worker1.lbfactor=50
worker.worker1.cachesize=10
worker.worker1.cache_timeout=600
worker.worker1.socket_keepalive=1
worker.worker1.recycle_timeout=300
```

This setup guide assumes that the Tomcat engine runs on the same machine as the Apache web server. If you want to distribute the two services on two machines, change `localhost` to the hostname of the machine where Tomcat is installed.

Apache is now completely configured and should be restarted using the command:

```
/etc/init.d/apache2 restart
```

7 Installing MySQL and setting up a database

MySQL is the preferred DBMS for EvaJ. If it is not installed on your server, please install it using Apt typing the following:

```
apt-get update
apt-get install mysql-server
```

Make sure that you have set a root password for MySQL before continuing here. Apt might have asked to specify a root password. If you did this, you are safe. Otherwise, refer to [SECURINGMYSQL].

To be able to check the contents of your databases you might want to install PHPMyAdmin as well. You can do this typing:

```
apt-get update
apt-get install phpmyadmin
```

Now, create a MySQL database and user for EvaJ:

```
mysql --user=root -p -e "CREATE DATABASE evaj"
mysql --user=root -p -e "GRANT ALL PRIVILEGES ON evaj.* TO 'evaj'@'localhost' IDENTIFIED BY 'password'"
mysql --user=root -p -e "GRANT ALL PRIVILEGES ON evaj.* TO 'evaj'@'%' IDENTIFIED BY 'password'"
```

Note that you should replace `password` with a more secure password. The last line might only be needed, if Tomcat and MySQL are on different machines.

8 Deploying EvaJ

To deploy EvaJ in the environment that you just prepared, create a directory called `evaj` in your `webapps` directory using:

```
mkdir /var/lib/tomcat/webapps/evaj
```

Now, copy the contents of the software distribution package that you obtained to this directory.

The last step before actually running EvaJ consists in configuring `WEB-INF/jdbc.properties` using your favourite editor. Make sure that it contains the following lines:

```
jdbc.driverClassName=com.mysql.jdbc.Driver
jdbc.url=jdbc:mysql://localhost:3306/evaj
jdbc.username=evaj
jdbc.password=password
hibernate.dialect=org.hibernate.dialect.MySQLDialect
```

You should, of course, replace `password` with the password you just chose while creating the MySQL user.

EvaJ should be deployed and running now on your machine. Try to access it using your favourite web browser typing the URL:

```
https://yourhost/evaj
```

9 References

- [JAVADEBIAN] http://www.hilberath.de/linux/sarge_j2se.html
- [SUNJDK] <http://java.sun.com/j2se/1.5.0/download.jsp>
- [MITKERB] <http://web.mit.edu/kerberos/www/>
- [KTHKRB] <http://www.pdc.kth.se/kth-krb/>
- [HEIMDAL] <http://www.pdc.kth.se/heimdal/>
- [MODAUTHKERB] http://sourceforge.net/project/showfiles.php?group_id=51775
- [APACHE2SSLDEBIAN] http://mario.espaciolinux.com/apache2_ssl.html
- [SECURINGMYSQL] <http://dev.mysql.com/doc/refman/5.0/en/default-privileges.html>