Installation Guide

OpenLaboratoryFramework

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Outline

1 INTRODUCTION

The purpose of this document is to help system administrators to set up the OpenLaboratoryFramework (OLF) web application and the necessary environment step-by-step.

The OLF is developed with GRAILS, a java-based solution for creating web applications. It is delivered as a packaged WAR file and can therefore be deployed in a number of different web containers, although this guide will only provide an explanation of how to set up a WAR file in an Apache Tomcat installation.

Besides the web container, a database management system (DBMS) is needed. The connection is established via a JDBC adapter and can therefore be used again with different DBMS like Microsoft SQL Server, Oracle XE, mySQL and many more. This installation has only been packaged with a Microsoft SQL Server 2005 JDBC driver by now and this guide will explain how to set up the DBMS correctly.

All necessary files are available at:

[1] https://sourceforge.net/downloads/openlaboratory/

2 MICROSOFT SQL-SERVER 2005

The OLF is capable of automatic schema export. This means that it is sufficient to provide a running Microsoft SQL Server 2005 (SQL-Server) installation with a pre-configured database and an user that is allowing the OLF to access it.

It is assumed that the SQL-Server is already up and running and that the Microsoft SQL Server Management Studio (SMS), as well as the Microsoft Server Configuration Manager (SCM) are installed.

Please note that the settings could be labelled slightly different as the author had to translate them back from German to English.

2.1 Protocol Settings

In the SCM select Network-Configuration->Protocols from the tree on the left-hand side. Then make sure that the TCP/IP protocol is activated and configured for a specific port (properties -> IP-Adresses -> IPAll). The port and IP address will be needed for further configuration.

2.2 Authentication Type

In the SMS go to the properties page of the server (right click in object explorer). Select Security and change the authentication type from Windows-Authentication to SQL-Server and Windows-Authentication, if not already done before. This is necessary for the JDBC driver to connect to the database.

2.3 Login Creation

A user is needed for the JDBC driver to authenticate. Therefore select Security in the object explorer. There is a folder called Logins where a new Login should be created. Select an arbitrary name, but make sure that you switch to SQL-Server authentication and give a password to that user. Uncheck the checkbox below where guidelines for the password are enforced.

2.4 Database Creation

Select Databases from the object explorer and create a new database (with an arbitrary name). This documents assumes a database called ‘olab’.

2.5 Create User and Assign Login

Now that we have a database and a login, we need to configure the access for that user. Therefore select the newly created database and go to Security->Users. Create a new user and assign a username. Please also assign the login name that you have previously chosen. At last, you need to configure access rights by checking some of the roles at the bottom of the window. You have to grant more or less full access to the new user, as the application must have enough rights to create new tables (and drop existing ones, depending on the selected JDBC access type.

2.6 Possible Problem When Tables / Relations Already Exist

We have encountered a problem where the application was not able to change the scheme of already existing tables or relations. In this case you should either modify the scheme manually or - if possible without data loss - drop the table and let the application re-create it.

3 APACHE TOMCAT (TOMCAT)

3.1 Java Development Kit (JDK)

The Tomcat needs a Java Runtime Environment (JRE) to work properly. The same goes for the OLF. To guarantee that all features are provided we suggest to install the newest version (to date this is version 6.20 [2]).

3.2 Deployment

The Apache Tomcat has been tested with version 6.0.26 and it is recommended to use the same version as also provided in [1]. It probably makes sense to install the web container together with a service as already suggested during the installation procedure. One of the benefits is that you do not have to start the web container manually. Deployment in Tomcat is straight forward:

Select ‘Configure Apache’ from the start menu. Then STOP Tomcat. Now copy the provided WAR file [1] to the webapps folder of Tomcat (Usually this is

C:\Programs\Apache Software Foundation\Tomcat 6.0\webapps

Now go back to the configuration program and START Tomcat. You can find all kinds of log files in Tomcat 6.0\logs. ‘stdout_********.log* is usually of most interest as you can immediately see whether there have been problems during the start-up of the application.

3.3 Change Apache Port

Apache usually hosts its web application on port 8080. As many web containers do so, you might want to change this. This is possible by editing Tomcat 6.0\conf\server.xml. The correct line is usually 69. Restart Tomcat after the change to see an effect.

4 SETTING UP THE OLF

The OLF does not yet know where to find its database and thus the startup will probably fail (or use an in-memory database as fallback). There are two ways for configuring OLF to date.

4.1 Configuration via Specified File

The preferred place to put the configuration file is within the web application. Therefore go to webapps\OpenLabFramework-0.1\WEB-INF\classes and create or modify a file 'openlabframework.properties'. To successfully configure a database you have to provide all necessary fields, similar to the following example:

```
dataSource.driverClassName=com.microsoft.sqlserver.jdbc.SQLServerDriver

dataSource.url=jdbc:sqlserver://172.16.6.250:1433;databaseName=olab;

dataSource.pooled=true

dataSource.username=olab

dataSource.password=keins

dataSource.dbCreate=create-drop
```

Replace the IP address, the port, the database name, the username and the password with your corresponding values. The settings are pre-configured for use of the SQL-Server. The last line is telling JDBC how to deal with the database. Here you can apply one of the values

- create-drop (scheme is generated each time the application starts)
- create (tables are created but never dropped)
- update (tables are only updated but not created)

4.2 Configuration using System Environment Variable

If you do not want to put the settings file within the web application for whatever reason (e.g. because you do not want to put it there whenever you perform an upgrade), you can also put it anywhere you like and give it an arbitrary name *.properties. All you have to do to make it still work is to set up an system environment variable called '`OPENLABFRAMEWORK_CONFIG`' and point it to your configuration file (path and filename).

4.3 First Start-Up

If the OLF starts up correctly you can access it usually via

http://localhost:8080/OpenLabFramework-0.1/

or by substituting localhost:8080 with the IP address and correct port. If everything went fine you'll see the login screen:

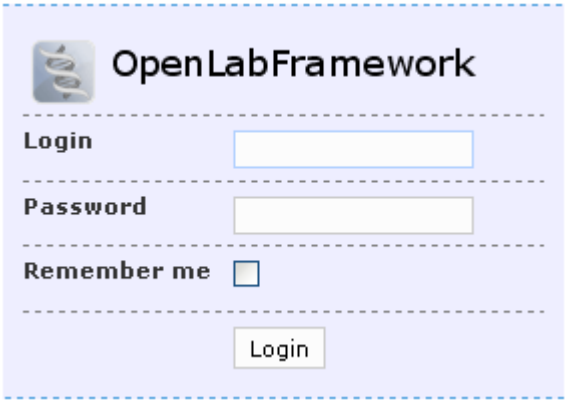

Figure 1: Login Screen

If you get a 404 error or 500 error please check the log file as it is likely that the startup has failed. Please also check if you have configured the server's firewall with respect to the database and web container ports. If you encounter any problems at this stage please don't hesitate to contact us.

On the other hand, if you actually see the login screen there are two default users provided:

1. Admin access can be obtained with user '**admin'** and password '**password'**.
2. Normal user access with user '**user'** and password '**password'**.

4.4 Check Database Configuration

If the OLF has started up correctly and you have been able to log in this does not necessarily mean that the database is configured correctly. It could be that the OLF has used a fallback in-memory database when it failed to configure the correct one. This can easily be checked by logging in as user ‘admin’ (password ‘password’ and going to Administration -> Show Database Configuration. If you find the same settings there as provided in your config file everything went fine.

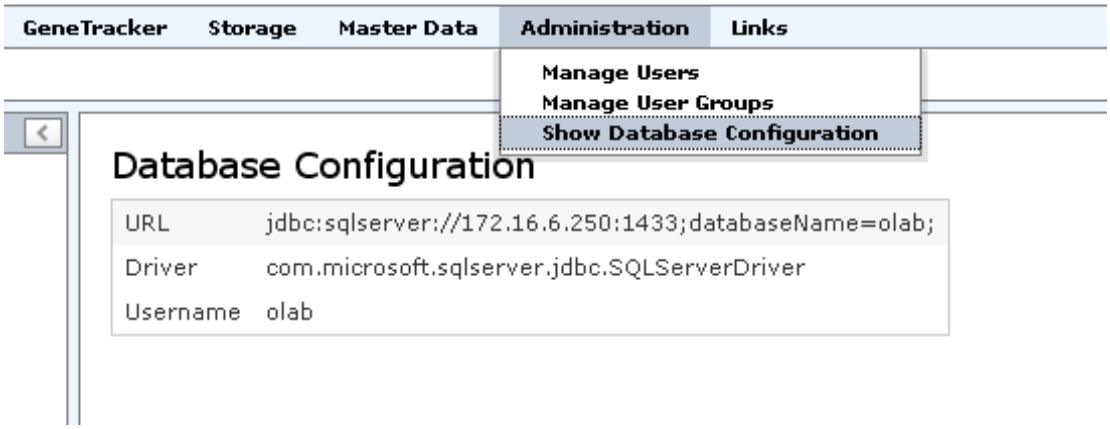

Figure 2: Show Database Configuration

Of course you could also check your database and see if it contains any data.

5 FINAL REMARKS

5.1 Browser Compatibility

The current development version is far from being complete. It has mainly been tested on Firefox (v. 3.x). As far as the author knows it is also working on Opera (v. 10.x) and Chrome (v. 4.x).

Major problems have been encountered using Internet Explorer (v. 6.x and 7.x), where a lot of the Java Script functionality is not working properly. Another browser should therefore be used for testing until the issues are resolved.

6 GLOSSAR

OLF	-	OpenLaboratoryFramework
SMS	-	Microsoft SQL-Server Management Studio
SMC	-	Microsoft SQL-Server Management Console
SQL-Server	-	Microsoft SQL-Server 2005
Tomcat	-	Apache Tomcat 6.0.26
JDBC	-	Java Database Connectivity
JRE	-	Java Runtime Environment (Oracle, formerly Sun)

7 RESSOURCES

[1] https://sourceforge.net/downloads/openlaboratory/

[2] http://java.sun.com/javase/downloads/widget/jdk6.jsp