



Administrator's Guide

Version 0.9

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1. ARCHITECTURE

Webolab consists of Condor cluster, web server and database for storing user's data.

Cluster is implemented using Condor framework (<http://www.cs.wisc.edu/condor/>). Cluster allows to connect distinct computers and multiprocessor cores. Cluster management platform is integrated into Webolab using web services.

Webolab is built on top of Apache Tomcat web server (<http://tomcat.apache.org/>), which supports Webolab application components and graphical user interface implemented using Java and JSP technology. Deployment on other Java application servers is possible.

Database for storage of user's data and simulation project's information is currently implemented using Oracle Express edition (<http://www.oracle.com/technology/products/database/xe/index.html>). More lightweight storage options are planned for future releases.

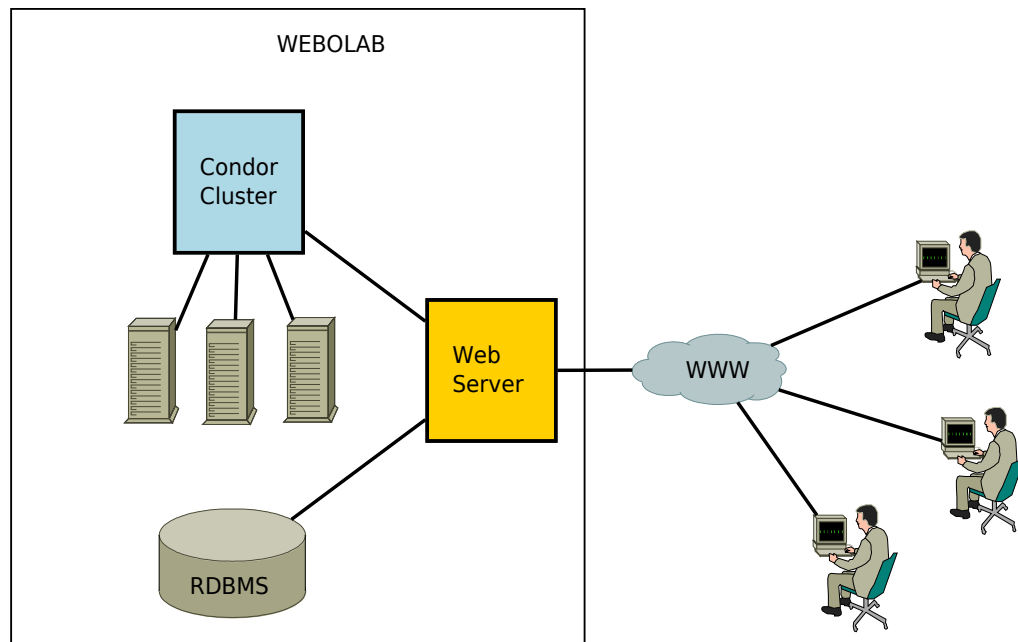


Fig. 1: Webolab architecture

2. INSTALLATION

2.1 Installing Condor Cluster

Webolab version 0.9 is compiled using Condor version 7.0.4. Condor software can be downloaded from <http://www.cs.wisc.edu/condor/downloads-v2/>

Current version of Webolab is tested only on Windows platforms (Win2000, XP, Vista). For Windows, Condor can be installed from zip file or Windows Installer (msi) file.

To install Condor, read installation instructions available on-line at:

http://www.cs.wisc.edu/condor/manual/v7.0/3_2Installation.html

Webolab accesses Condor via web services, therefore it is not important where Condor and Webolab application are installed on the same machine.

Condor configuration settings are defined in `condor_config` file. Usually it is located in `etc` subfolder within Condor installation directory. For exact location, refer to Condor documentation.

In order to enable web services, add the following description to `condor_config` file:

```
## Enable Web services
WEB_ROOT_DIR = $RELEASE_DIR/web
ENABLE_SOAP = TRUE
ENABLE_WEB_SERVER = TRUE
```

To create a new project, go to *Projects* page using *Projects* link on the left-side menu. In the *Projects* page, use command *Create New Project* to start creating a new project. In the *New Project* page, define project name and description. Finish creating project using *Add* command.

2.2 Installing Oracle Database Express

Current version of Webolab has been tested with Oracle Database 10g Express Edition, available at

<http://www.oracle.com/technology/software/products/database/xe/htdocs/102xewinsoft.htm>
|

For installation instructions refer to Oracle online documentation:

http://download.oracle.com/docs/cd/B25329_01/doc/install.102/b25143/toc.htm

After installing Oracle database, run scripts to create database user, tablespace and data structure and fill table with sample data.

To create database user, run *webolab_main.sql* script and when prompted specify password for the new user, default and temporary tablespaces. You will need to supply password for SYS user.

Be careful with already existing database schema, since *webolab_main.sql* drops previous user *webolab* if it exists.

Connect to Oracle with *webolab* user.

Run *webolab_tables.sql* to create tables and indexes for *webolab* user.

To fill tables with sample data, run *webolab_data.sql*, which copies sample data for users, groups and projects.

After these steps database is ready to use by Webolab application.

2.3 Installing Apache Tomcat Web Server

Currently tested web server configuration is Apache Tomcat 6.0 available from <http://tomcat.apache.org/>. For Windows platforms, installer is available which does not need any special configuration. Tomcat can be installed as a Windows service. Installation instructions are available at <http://tomcat.apache.org/tomcat-6.0-doc/setup.html>.

Tomcat requires logging information to run Webolab. Add the following description to *server.xml* configuration file in order to enable login into Oracle database:

```
<Realm className="org.apache.catalina.realm.JDBCRealm"
  driverName="oracle.jdbc.OracleDriver"
  connectionURL="jdbc:oracle:thin:@localhost"
  connectionName="webolab"
  connectionPassword="Your Oracle DB password"
  userTable="users"
  userNameCol="user_name"
  userCredCol="password"
  userRoleTable="user_roles"
  roleNameCol="role_name"
  resourceName="UserDatabase"/>
```

Libraries used by Webolab should be placed into common lib folder of Tomcat server, or into the corresponding application's folder.

Table 1: Libraries required by Webolab

Library	Files	Link
Apache Axis 1.2	axis.jar commons-discovery.jar commons-logging.jar jaxrpc.jar saaj.jar wsdl.jar	http://ws.apache.org/axis/
Apache Commons	commons-io-1.3.1.jar commons-fileupload-1.2.jar commons-httpclient-3.1-rc1.jar	http://archive.apache.org/dist/commons/

JavaBeans Activation Framework 1.1	activation.jar	http://java.sun.com/javase/technologies/desktop/javabeans/jaf/index.jsp
JavaMail API 1.4.1 Standard 1.1 Taglib	mail.jar jstl.jar standard.jar	http://java.sun.com/products/javamail/ http://jakarta.apache.org/site/downloads/downloads_taglibs-standard.cgi
Google Web Toolkit 1.4.60	gwt-user.jar	http://code.google.com/webtoolkit/
Oracle Database 10g R2 (10.2.0.1.0) JDBC Drivers	orai18n.jar ojdbc14.jar ojdbc14_g.jar	http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/htdocs/jdbc_10201.html

2.4 Installing Webolab Application

Webolab installation files can be downloaded from <http://sourceforge.net/projects/webolab/>. The following tables list available distribution files.

Table 2: Webolab distribution files

File	Description
webolab-0.9.war	Web application deployment archive file
webolab-config-0.9.zip	Webolab configuration scripts to setup database and support data processing engines
webolab-src-0.9.zip	Source code
webolab-docs-0.9.zip	Documentation: user's guide, administrator's guide, java docs

To deploy Webolab application to Tomcat web server, copy *webolab-0.9.war* file to Tomcat's *webapps* folder.

Configure Webolab application by editing *webolab.config* file in server's deployment folder of *webolab* application, e.g. *c:\apache-tomcat-6.0.2\webapps\webolab\webolab.config*. You may leave default settings except for the following entries:

- *projects_path*: defines path for storing the contents of user projects such as data, algorithms and results. At the root of this path, Webolab system files from *webolab-config-0.9.zip* archive, *librun/bin* folder should be copied. They are used to launch computing applications such as Matlab, Scilab, Octave, Java code or batch files. Example: *projects_path=c:/dev/apache-tomcat-6.0.2/projects*
- *collect_loc*: Condor's collector address includes computer's IP address and port for communication with Condor's collector. Example: *collect_loc=http://mycomputer.webolab.lt:9618*

- Oracle database user name and password for Webolab, e.g.:
db.user=webolab
db.pswd=your_db_password

Add Windows environment variable `WEBOLAB_CONFIG` pointing to Webolab configuration file, e.g. `c:\apache-tomcat-6.0.2\webapps\webolab\webolab.config`.

If you are planning to use Matlab or Scilab for job processing, install corresponding scripts from `matlab` and `scilab` sub-folders from `config` library according to the following table.

Table 3: Installation of processing scripts

Processing Engine	Directory	Files
Matlab	..\librun\src\matlab\	exit_matlab.m load_params.m save_params.m write_progress.m
Scilab	..\librun\src\scilab\	buildmacros.sce exit_scilab.sci load_params.sci save_params.sci write_progress.sci

After making configuration changes, restart Tomcat web server.

Start web browser and open page for `http://localhost:[port]/webolab`, where `[port]` is your port number if different from default.