

# Sakai Installation Guide

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*Abstract:*

*This document will give step by step instructions regarding the installation of a Sakai instance at the readers institution. The document is aimed at a technical user with some experience in Apache Tomcat and PostgreSQL RDBMS administration.*

## 1 Java Installation

1. Go to the Sun Java website (<http://java.sun.com/j2se/1.4.2/download.html>) and download the Java SDK (Software Development Kit).
2. Make the downloaded file executable and run it in the directory that you want the SDK installed in (I use '/usr/local').
3. Create an environment variable called JAVA\_HOME pointing to the directory that you just created in step 2. I export the environment variable in '/etc/profile'.

## 2 Maven Installation

1. Go to the Apache Maven site (<http://maven.apache.org/start/download.html>) and download Maven.
2. Expand the Maven archive into a directory (I use /usr/local). Create a symbolic link called maven pointing to the newly created Maven directory.
3. Add '/usr/local/maven/bin' to your PATH environment variable.

## 3 Install and Configure Tomcat

1. Go to the Apache Jakarta website (<http://jakarta.apache.org/>) and download Tomcat (I used versions 5.0.25 and 5.0.28 for the evaluation ,they both work OK).
2. Expand the tomcat archive into a directory (I use '/usr/local')
3. Create a symbolic link to the expanded directory called 'tomcat', the expanded directory will be called something like 'jakarta-tomcat-5.0.28'.
4. Create an environment variable called 'CATALINA\_HOME' pointing to the symbolic link that you just created in step 3. My entry is 'CATALINA\_HOME=/usr/local/tomcat'.
5. Create an environment variable called 'CATALINA\_OPTS' and set it to '"-Xms128M -Xmx256M"'. My entry would be 'CATALINA\_OPTS="-Xms256M -Xmx512M"'. The double quotes are essential. This permits the Java runtime to use up to 256MB of heap memory. Tomcat needs a LOT of heap memory, so if you have more memory available, increase the -Xmx part to half of what you have. A good rule of thumb is to use two thirds of what is available on a server that is mainly using tomcat, and half if it is a workstation being used for other purposes.

## 4 Download Sakai

1. Go to the Sakai website (<http://cvs.sakaiproject.org/release/1.0.b1/src/sakai-src.zip>) and download the sakai source archive to your computer.
2. Expand the archive into 'HOME\_DIR/projects/sakai' or something similar, this directory will be referred to as 'SAKAI\_SRC\_DIR' for the duration of this document. I use '/home/fisha/projects/sakai'.

## 5 Download, Install and Configure PostgreSQL

### 5.1 Download

1. Download the PostgreSQL source from <http://www.postgresql.org>
2. Expand the source into your home directory. For me this would be '/home/fisha/src'.

### 5.2 Install

1. Follow the instructions in the expanded source. They are in a file called INSTALL. When you have completed this process you will hopefully have a working PostgreSQL database server on your computer.
2. su to postgres ('su -l postgres') and create a 'sakai' user. You do this by running the command 'createuser -P sakai'. You will be prompted for a password. I will refer to the sakai database username and password from hereon as 'SAKAI\_DB\_USER' and 'SAKAI\_DB\_PASSWORD' respectively. When asked if the sakai user needs to create databases and users, say no.
3. Create the Sakai database. As the postgres user, run the command 'createdb -O SAKAI\_DB\_USER sakai'. This means 'create an empty database called sakai, and mark it as being owned by the user 'SAKAI\_DB\_USER'.

### 5.3 Configure Sakai Database

Sakai comes with a set of SQL scripts for building the Sakai database. Unfortunately, these are tuned for Oracle and thus need modifying before running across PostgreSQL.

1. Change directory to 'SAKAI\_SRC\_DIR/deploy/src/sql/legacy'.
2. Copy the entire oracle directory to a new directory called postgres, then change to that directory..
3. Concatenate all the files beginning with 'chef\_' into one file called 'pg\_all.sql'.
4. Edit pg\_all.sql and delete all the lines starting with 'DROP'.
5. Replace all instances of 'VARCHAR2' with 'VARCHAR'.
6. Replace 'BODY LONG RAW' with 'BODY BYTEA'.
7. Replace 'SESSION\_USER' with '"SESSION\_USER"'. This is a reserved word in PostgreSQL so it has to be wrapped in double quotes for the database server to accept it.
8. Switch user to postgres ('su -l postgres') and create the sakai tables by running 'psql -U SAKAI\_DB\_USER SAKAI < pg\_all.sql'.

## 6 Build and Deploy Sakai

1. Copy the directory 'SAKAI\_SRC\_DIR/deploy/src/usr\_local\_sakai' to '/usr/local/sakai'.
2. Change directory to '/usr/local/sakai'.
3. For each directory 'sakai-component', 'legacy-component', and 'framework-component', change to the directory, delete 'components.xml' and then rename 'components\_db.xml' to 'components.xml'.
4. Change directory back to '/usr/local/sakai' and edit 'sakai.properties'.
5. Locate the lines specifying the Oracle database parameters and cut and paste them back into the document. Change the 'sql.driver' entry so that it reads 'sql.driver=org.postgresql.Driver'. Change the 'sql.connect' entry so that it reads 'sql.connect=jdbc:postgresql://localhost:5432/SAKAI'. Change the 'sql.user' entry so that it reads 'sql.user=SAKAI\_DB\_USER' (remember, SAKAI\_DB\_USER refers to the PostgreSQL user that owns the sakai database). Change the 'sql.pw' entry, so that it reads 'sql.pw=SAKAI\_DB\_PASSWORD'.
6. Change directory to 'legacy-component' and edit 'components.xml'. Wherever there is a property named 'locksInDb', change the value from true to false.
7. Edit 'SAKAI\_SRC\_DIR/legacy-component/src/java/org/sakaiproject/component/legacy/id/ClusterIdService.java', replacing 'CHEF\_ID\_SEQ.NEXTVAL from dual' with 'nextval('CHEF\_ID\_SEQ')'.
8. Edit 'SAKAI\_SRC\_DIR/legacy-component/src/java/org/sakaiproject/component/legacy/event/ClusterEventTracking.java', replacing 'CHEF\_EVENT\_SEQ.NEXTVAL from dual' with 'nextval('CHEF\_EVENT\_SEQ')'.
9. Edit 'SAKAI\_SRC\_DIR/framework-component/src/java/org/sakaiproject/component/framework/session/ClusterUsageSession.java', replacing 'SESSION\_USER' with '\\"SESSION\_USER\\"'. SESSION\_USER is a reserved word in PostgreSQL (unlike Oracle) and thus needs to be enclosed in escaped double quotes.
10. Setup the 'build.properties' file up in your home directory, as per the instructions at the sakai download site. The 'maven.repo.remote' entry can be modified to add another repository and thus speed project building. I added 'http://mirrors.sunsite.dk/maven' to the comma separated list of repositories.
11. Change to SAKAI\_SRC\_DIR and type 'maven'. Sakai should compile and a set of web applications will be installed into Tomcat. You should now be able to go to the URL 'http://localhost:8080/sakai-uPortal' and log in as 'admin' with password 'admin'. You obviously need to change this as soon as possible!