

Install Tomcat 8

- Apache Tomcat - <http://tomcat.apache.org/>
- **Note:** Always do a fresh install of Tomcat 8
- **Note:** For Sakai versions prior to 11.4 please use Tomcat 8.0.34 or earlier. Later versions of Tomcat may cause problems.

example:  [SAK-31608](#) - Sakai has startup warnings on Tomcat 8.0.39+ CLOSED

- **Note:** Windows users should ensure that there are no spaces in the complete tomcat path as this causes errors with JSF tools in Sakai
GOOD: C:\opt\tomcat\, C:\sakaistuff\installs\tomcat\
BAD: C:\program files\tomcat\, C:\opt\apache tomcat 8.0.43\

1. Download Tomcat 8 - <https://tomcat.apache.org/download-80.cgi>

- Windows users should get the zip file instead of installing a service
It makes viewing the tomcat logs easier and it is easier to configure

2. Extract to /opt (symlink the apache-tomcat-8.0.x directory to tomcat after extracting)

- Example (assuming you have saved the file as /opt/apache-tomcat-8.0.x.tar.gz)

```
cd /opt
tar xzvf apache-tomcat-8.0.x.tar.gz
ln -nsf apache-tomcat-8.0.x tomcat
```

- Windows users should either rename the directory or, if comfortable, create a directory junction using an elevated cmd prompt:

```
mklink /J C:\apache-tomcat-8.0.x C:\tomcat
```

3. Modify conf/server.xml for international character support

- a. Add URIEncoding="UTF-8" to the Connector element
 - <Connector port="8080" URIEncoding="UTF-8" ...

4. Set environment variable: CATALINA_HOME=/opt/tomcat

5. Add \$CATALINA_HOME/bin to PATH

6. Setup the SETENV file in the tomcat/bin directory with JAVA_OPTS (from [Install Java 1.8](#)).

Populate Database With Demo Data

Instead of starting with an empty database you can add the flag `-Dsakai.demo=true` in addition to the others shown here. During your first Tomcat launch it will populate your database with test data (students, courses, etc). Once the data has been created remove this flag for subsequent Tomcat launches. Be advised that this flag will not trigger on a database with data already in it so you must make this choice during the initial setup. It should also be noted that without this flag one will not be able to create any course sites in Sakai unless Academic Term, Subject, Course, and Section data is manually added to the "cm_" tables in the database.

 We recommend using `-Djava.util.Arrays.useLegacyMergeSort=true` until this issue can be resolved -

 [SAK-31707](#) - Broken Equality Comparators in Gradebook RESOLVED

- a. Mac/Linux: Create a file called **setenv.sh** with the following (alternately, you can put this into your **.bashrc** file so they're automatically executed):

Tomcat 8 Mac/Linux

```
export JAVA_OPTS="-server -d64 -Xms1g -Xmx2g -Djava.awt.headless=true -XX:+UseCompressedOops -XX:+UseConcMarkSweepGC -XX:+DisableExplicitGC"
JAVA_OPTS="$JAVA_OPTS -Dhttp.agent=Sakai"
JAVA_OPTS="$JAVA_OPTS -Dorg.apache.jasper.compiler.Parser.STRICT_QUOTE_ESCAPING=false"
JAVA_OPTS="$JAVA_OPTS -Dsakai.security=$CATALINA_HOME/sakai/"
JAVA_OPTS="$JAVA_OPTS -Duser.timezone=US/Eastern"
JAVA_OPTS="$JAVA_OPTS -Dsakai.cookieName=SAKAI2SESSIONID"
JAVA_OPTS="$JAVA_OPTS -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=8089 -Dcom.sun.management.jmxremote.local.only=false -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.management.jmxremote.ssl=false"
```

- b. Windows(PC): Create a file called **setenv.bat** with the following:

Tomcat 8 Windows

```
set JAVA_OPTS=-server -Xmx1028m -XX:MaxMetaspaceSize=512m -Dorg.apache.jasper.compiler.Parser.STRICT_QUOTE_ESCAPING=false -Djava.awt.headless=true -Dcom.sun.management.jmxremote -Dhttp.agent=Sakai -Djava.util.Arrays.useLegacyMergeSort=true -Dfile.encoding=UTF8
```

7. [OPTIONAL] Delete the default webapps from the webapps dir

```
rm -rf webapps/*
```

Improve startup speed

You can improve startup speed under Tomcat 8 significantly.

For Sakai 12 and earlier: Edit the file conf/context.xml and add this JarScanner block to the <Context>

```
<JarScanner>
  <!-- This is to speedup startup so that tomcat doesn't scan as much -->
  <JarScannerFilter defaultPluggabilityScan="false"
defaultTldScan="false"
tldScan="jsf-impl-*.jar,jsf-widgets-*.jar,myfaces-impl-*.jar,pluto-taglib-*.jar,sakai-sections-app-util-*.jar,
spring-webmvc-*.jar,standard-*.jar,tomahawk*.jar,tomahawk-*.jar"/>
</JarScanner>
```

For Sakai 19 and later: After the JSF 2.3 migration, users may update the tomcat configuration to this one:

```
<JarScanner>
  <!-- This is to speedup startup so that tomcat doesn't scan as much -->
  <JarScannerFilter defaultPluggabilityScan="false" />
</JarScanner>
```