

This document outlines the steps needed to setup eSIMS in your school. In order to use this software you need to have a fully functional computer network, and preferably access to the internet. You will need a dedicated server to install the database and application server needed for the software to run.

Client Software

The client machines must have the following software installed on them.

- 1) Mozilla Firefox 2.0.0.3 or Internet Explorer 7.0.
 - 1.1) Javascript **must** be enabled.

Please note that Internet Explorer 6.x that ships as default with Windows XP will not work and will not be supported.

We recommend using Mozilla Firefox as the browser to access esims. As Firefox is free, popular, open-source and more W3C standard compliant, we will prefer it over any other browser.

Client Hardware

Color monitor: 16 bit colors and must support a minimum resolution of 1024x768.
Access to the network on which eSIMS is hosted.

Server Hardware

eSIMS needs to be installed on a machine with the following hardware configuration.

Processor : Intel Core 2 DUO / AMD Athlon @ 1GHz or higher.

Ram : At least 2 GB of DDR-2 Ram. 4GB is recommended.

Hard disk: SATA/SCSI which can operate @ 10,000 RPM, minimum of 120MB disk space available.

This machine must be available via http to any of the client machines that need access to the eSIMS.

Server software

Ubuntu Linux Server 6.04 or Windows XP /2000 as the Operating system.

Sun Java JDK 1.5 (or higher). (**A JRE will not suffice**)

Apache Tomcat 5.5.20 (or higher).

MySQL 5.0 database

Please note that JDK 1.5 is a must, eSIMS is heavily dependant on many features provided with this version of the JDK. So it's mandatory to have at least version 1.5

Even though we recommend Ubuntu Linux 6.04 as the Server, the software will work equally well on Windows XP based machine.

Software install process on Windows.

1) MySQL 5.0 setup

Obtain MySQL 5.0 from <http://dev.mysql.com/get/Downloads/MySQL-5.0/mysql-essential-5.0.41-win32.msi/from/pick> and run the setup wizard.

When you are asked to configure the instance use the following settings.

Choose **detailed configuration**, click **next**.



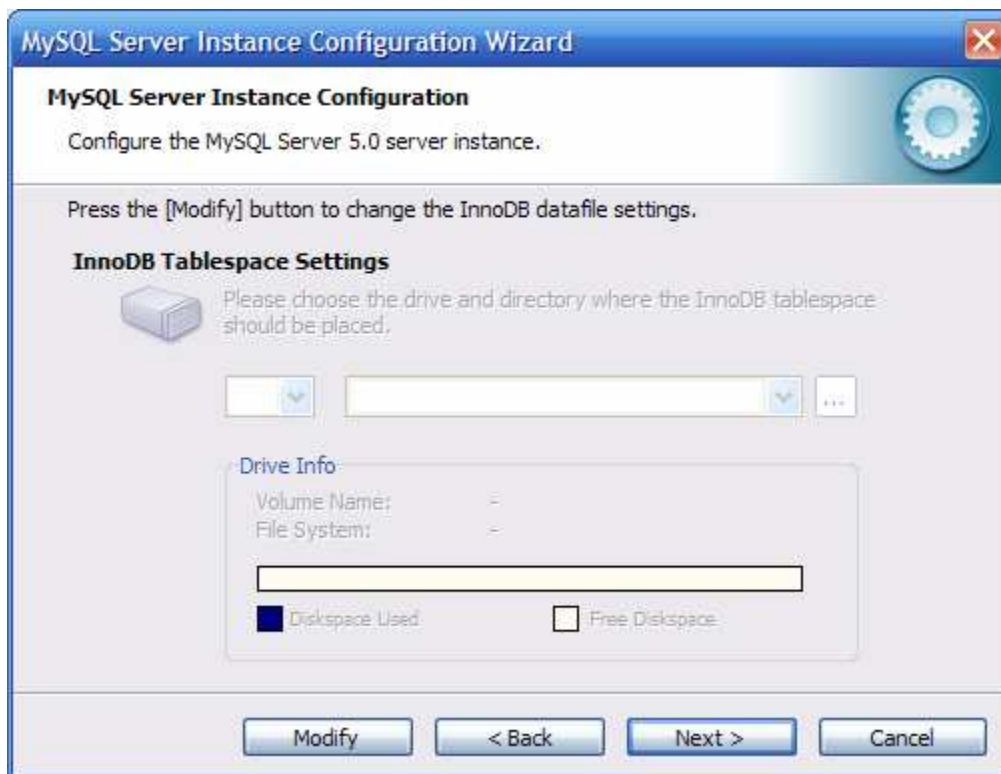
In the next screen **select Server machine**, click **next**



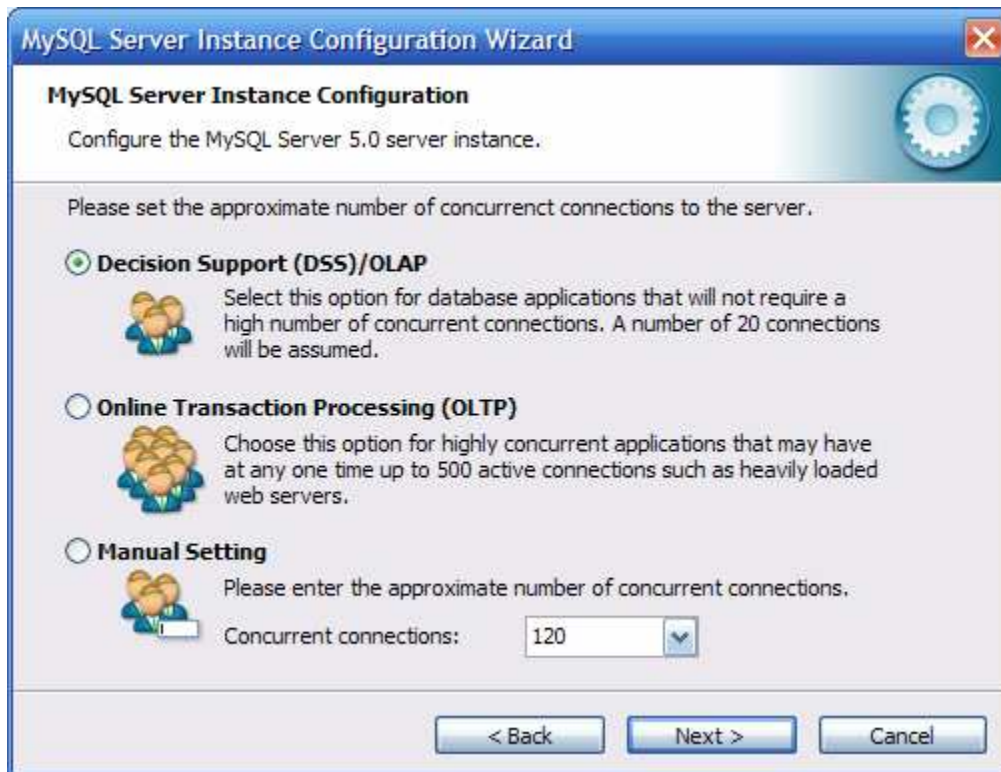
In the database usage, Select transactional database only, click next



Choose the default settings for InnoDB tablespace settings, click next



In the concurrent connections choose **Manual settings** and enter 120, click next



The screenshot shows the 'MySQL Server Instance Configuration Wizard' window. The title bar reads 'MySQL Server Instance Configuration Wizard'. The main heading is 'MySQL Server Instance Configuration' with a subtitle 'Configure the MySQL Server 5.0 server instance.' Below this, it says 'Please set the approximate number of concurrent connections to the server.' There are three radio button options: 'Decision Support (DSS)/OLAP' (selected), 'Online Transaction Processing (OLTP)', and 'Manual Setting'. The 'Manual Setting' option is selected, and it includes a text input field for 'Concurrent connections' with the value '120'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

MySQL Server Instance Configuration
Configure the MySQL Server 5.0 server instance.

Please set the approximate number of concurrent connections to the server.

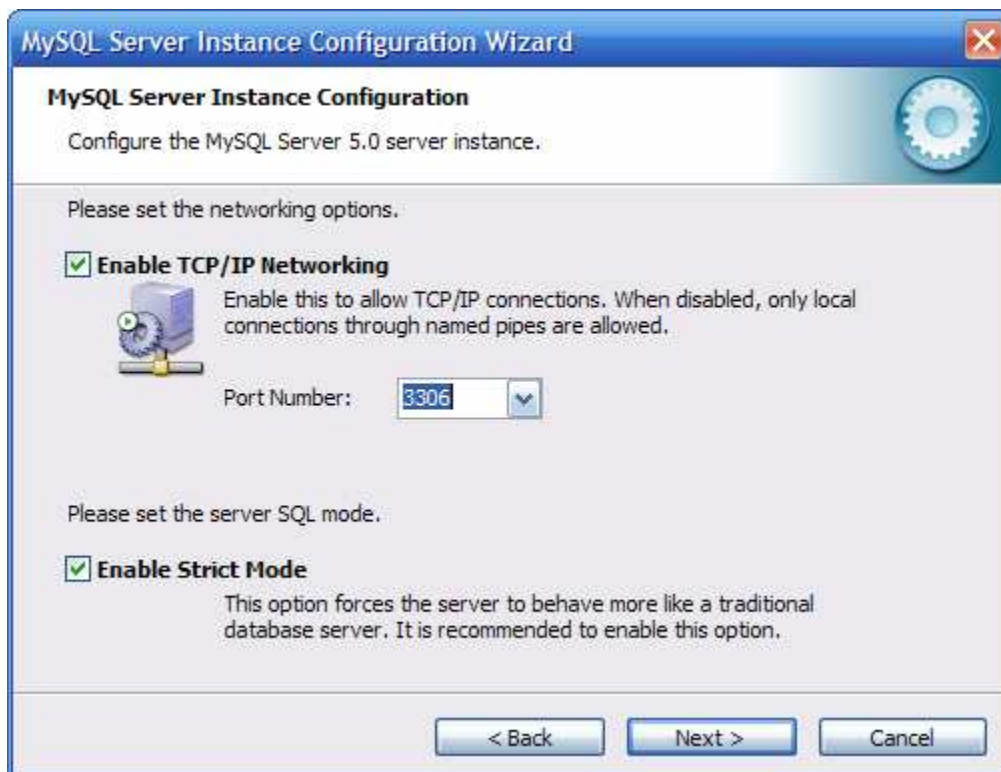
☒ **Decision Support (DSS)/OLAP**
Select this option for database applications that will not require a high number of concurrent connections. A number of 20 connections will be assumed.

☐ **Online Transaction Processing (OLTP)**
Choose this option for highly concurrent applications that may have at any one time up to 500 active connections such as heavily loaded web servers.

☒ **Manual Setting**
Please enter the approximate number of concurrent connections.
Concurrent connections:

< Back Next > Cancel

In the networking options screen, **Enable TCP/IP** and **strict mode**



The screenshot shows the 'MySQL Server Instance Configuration Wizard' window. The title bar reads 'MySQL Server Instance Configuration Wizard'. The main heading is 'MySQL Server Instance Configuration' with a subtitle 'Configure the MySQL Server 5.0 server instance.' Below this, it says 'Please set the networking options.' There is a checked checkbox for 'Enable TCP/IP Networking'. Below this, there is a text input field for 'Port Number' with the value '3306'. Below this, it says 'Please set the server SQL mode.' There is a checked checkbox for 'Enable Strict Mode'. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

MySQL Server Instance Configuration
Configure the MySQL Server 5.0 server instance.

Please set the networking options.

☒ **Enable TCP/IP Networking**
Enable this to allow TCP/IP connections. When disabled, only local connections through named pipes are allowed.
Port Number:

Please set the server SQL mode.

☒ **Enable Strict Mode**
This option forces the server to behave more like a traditional database server. It is recommended to enable this option.

< Back Next > Cancel

In the character set screen, choose the default character set.



In the Windows options screen, **Select the Install as windows service, Include bin directory on path options**

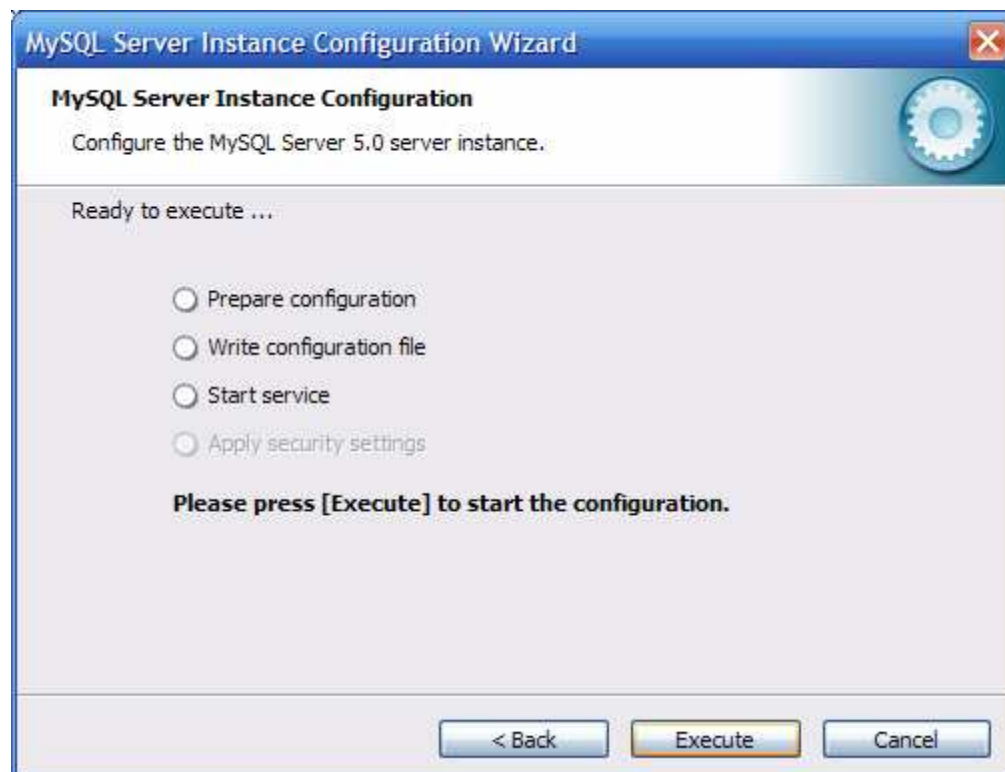


In the security options, **Please change the root password to a strong one.**
Do not Enable remote root access. Please note down the password without fail.



The screenshot shows the 'MySQL Server Instance Configuration Wizard' window. The title bar reads 'MySQL Server Instance Configuration Wizard'. The main heading is 'MySQL Server Instance Configuration' with a subtitle 'Configure the MySQL Server 5.0 server instance.' Below this, it says 'Please set the security options.' There are two main sections. The first section is 'Modify Security Settings', which is checked with a green box. It contains three password fields: 'Current root password:' (with a placeholder '*****'), 'New root password:' (with a placeholder '*****'), and 'Confirm:' (with a placeholder '*****'). To the right of each field is a label: 'Enter the current password.', 'Enter the root password.', and 'Retype the password.' respectively. Below these fields is an unchecked checkbox labeled 'Enable root access from remote machines'. The second section is 'Create An Anonymous Account', which is also unchecked. It features a question mark icon and the text: 'This option will create an anonymous account on this server. Please note that this can lead to an insecure system.' At the bottom of the window are three buttons: '< Back', 'Next >', and 'Cancel'.

Finally apply all the settings by clicking **execute**.



The screenshot shows the 'MySQL Server Instance Configuration Wizard' window at the 'Ready to execute ...' step. The title bar reads 'MySQL Server Instance Configuration Wizard'. The main heading is 'MySQL Server Instance Configuration' with a subtitle 'Configure the MySQL Server 5.0 server instance.' Below this, it says 'Ready to execute ...'. There are four radio button options: 'Prepare configuration', 'Write configuration file', 'Start service', and 'Apply security settings'. The 'Apply security settings' option is selected. Below these options is the text: 'Please press [Execute] to start the configuration.' At the bottom of the window are three buttons: '< Back', 'Execute', and 'Cancel'.

If you are Using Ubuntu Linux as the server, it by default ships with MySQL 5.0. and you can skip the previous step all-together. You can avail the services of a Linux admin to set up and fine tune your Linux Installation. However you must turn off apache web-server, and other services like SMTP that you will not be using, to gain maximum performance. Consult your system admin on how to turn off unwanted services.

If you need to install MySQL on Linux, you can do so by using the command

```
sudo aptitude install mysql-server
```

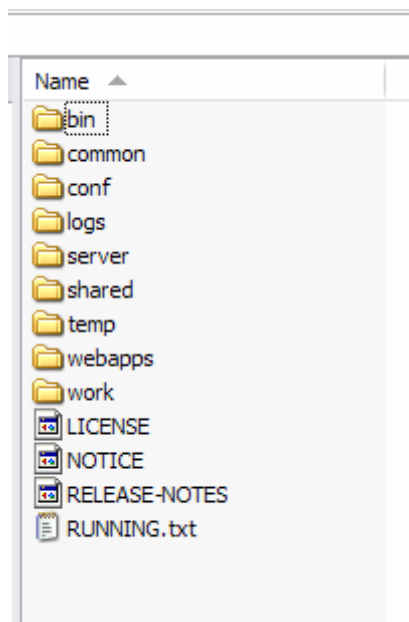
Tomcat 5.5.20 setup.

Obtain tomcat 5.5.20 from <http://archive.apache.org/dist/tomcat/tomcat-5/v5.5.20/> and unzip it to your hard drive.

If on windows you can unzip it to C:\esims\tomcat , after unzip you will have a directory structure that looks like

On linux we recommend creating a new user called 'esimsuser' and unzipping tomcat into

```
/home/esimsuser/esims/tomcat
```



Changing the default port number of tomcat from 8080 to 80.

Open the file called server.xml in the conf folder in your tomcat install.

Locate the lines that look like

```
<!-- Define a non-SSL HTTP/1.1 Connector on port 8080 -->
<Connector port="8080" maxHttpHeaderSize="8192"
  maxThreads="150" minSpareThreads="25" maxSpareThreads="75"
  enableLookups="false" redirectPort="8443" acceptCount="100"
```

```
connectionTimeout="20000" disableUploadTimeout="true" />
```

change the connector port address from 8080 to 80. Make sure that you are not running any other web servers on this port

Configuring Tomcat for production environment.

Performance tuning is a very complex area, and the performance of the application depends of various factors both hardware and software. We go ahead assuming that the hardware configuration is the same as mentioned earlier.

a) **Set the Java Virtual Machine (JVM) operation into server mode.**

Edit Catalina.bat/sh file under the bin directory of tomcat.

Locate the line that looks like

```
set JAVA_OPTS=%JAVA_OPTS% -
Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager
-
Djava.util.logging.config.file="%CATALINA_BASE%\conf\logging.properties"
```

Change it to

```
set JAVA_OPTS=%JAVA_OPTS% -server -
Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager
-
Djava.util.logging.config.file="%CATALINA_BASE%\conf\logging.properties"
```

b) **Allot more heap space for the JVM.**

Change the same line to

```
set JAVA_OPTS=%JAVA_OPTS% -server -Xms128m -Xmx384m -
Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager
-
Djava.util.logging.config.file="%CATALINA_BASE%\conf\logging.properties"
```

c) **Enable GZIP compression.**

In the server.xml file you will find some lines that look like

<!-- Note : To use gzip compression you could set the following properties :

```
compression="on"
compressionMinSize="2048"
noCompressionUserAgents="gozilla, traviata"
compressableMimeType="text/html,text/xml"
-->
```

uncomment that section (look for the - - >) to make it look like

<!-- Note : To use gzip compression you could set the following properties : -->

```
compression="on"
compressionMinSize="2048"
noCompressionUserAgents="gozilla, traviata"
compressableMimeType="text/html,text/xml"
```


d) Setting tomcat into production server mode.

Edit the file called web.xml under the conf directory of tomcat. **Please note that this is not your application's web.xml file.**

Locate the lines that look like

```
<servlet>
  <servlet-name>jsp</servlet-name>
  <servlet-class>
    org.apache.jasper.servlet.JspServlet</servlet-class>
  ...
</servlet>
```

Add the following lines just before the </servlet> tag

```
<init-param>
  <param-name>development</param-name>
  <param-value>>false</param-value>
</init-param>

<init-param>
  <param-name>reloading</param-name>
  <param-value>>false</param-value>
</init-param>

<init-param>
  <param-name>trimSpaces</param-name>
  <param-value>>true</param-value>
</init-param>

<init-param>
  <param-name>genStringAsCharArray</param-name>
  <param-value>>true</param-value>
</init-param>
```

3) Install JDK 1.5

On Windows you can obtain the JDK from http://java.sun.com/javase/downloads/index_jdk5.jsp. We recommend using JDK 1.5 update 11.

On Linux you can install it by typing

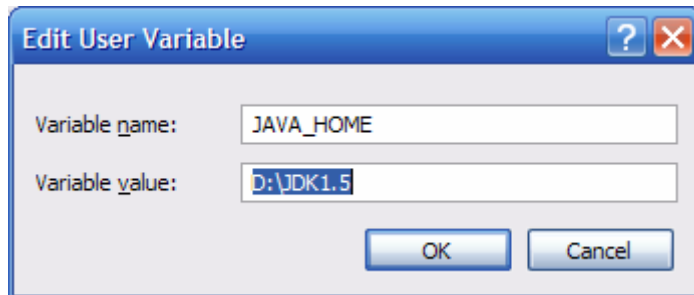
```
sudo aptitude install sun-java5-jdk
```

in the shell.

Once the setup is done you need to set up an environment variable called JAVA_HOME

On Windows you can set it by Right clicking on My Computer > properties > advanced > Environment variables and setting the appropriate values on where you have installed your JDK.

Please note that this must not be the bin folder under JDK. It must be one level higher than the bin.



On Linux it can be set by editing /home/esimsuser/.bashrc file and adding the following lines

```
JAVA_HOME=/user/lib/jvm/<jvm_name>
export JAVA_HOME
```

Make sure to replace <jvm_name> with the correct name (this will be the actual folder with version, and not the symbolic link)

Finally, on windows, copy the file called tcnative-1.dll under the extras directory into your JAVA_HOME/bin directory

Setup for tomcat on Linux can be found at <http://tomcat.apache.org/tomcat-5.5-doc/apr.html>

4) Setting up the database

Open a command prompt or shell and move into the unzipped install.

```
cd eims/dbscripts
```

type the following commands

```
mysql -u root -p
```

```
<provide the root password>
```

```
source esims-setup.sql
```

This will execute the sql scripts and setup the basic user/privileges needed to operate the system.

Setting up the system.

Copy esims.war **into the webapps folder of tomcat.**

Open a shell/ command prompt and move into the bin directory of tomcat.

Execute startup.bat if on Windows.

If on Linux, use the following commands.

```
chmod +x ./*.sh
```

and then type

```
./startup.sh
```

A bunch of messages should appear which reads like

```
May 23, 2007 3:51:41 PM org.apache.catalina.storeconfig.StoreLoader
load
INFO: Find registry server-registry.xml at classpath resource
May 23, 2007 3:51:41 PM org.apache.catalina.startup.Catalina start
INFO: Server startup in 12390 ms
```

Now you need to shutdown the server by executing

```
On Windows
    shutdown.bat
On Linux
    shutdown.sh
```

Move into the esims/WEB-INF/classes directory and edit the file log4j.properties.

Find the line that looks like

```
log4j.appender.rolling.File=esims.log
```

Change esims.log to point to some path on your local hard drive which is not under the tomcat install. Please make sure that the path is correct. On windows, use double slashes in the path for eg: c:\esims\logfiles must be typed in as c:\\esims\\logfiles, you can also enter the path as c:\esims/logfiles. Please double check this step.

Now you can start the application server, and begin using the application.

By default a user called admin with password 'admin123' will be created. Please don't forget to change the password at your first login.

To access the machine from a client you can try entering the following URL in your browser

http://<ip_address_or_server_name>/esims

For eg: if you server is named esimssrvr, you can access esims by pointing your browser to

<http://esimssrvr/esims/>