Installing OpenClinica 2.0 on Windows

Document version: 1.0
Author: Jaron Sampson <jsampson@akazaresearch.com>
Revised: October 29, 2006

Date	Version	Description of Document Updates	Author
10/21/06	0.1	DRAFT	jcarmich
10/29/06	1.0	BETA	jsampson
10/29/06	1.1	Added some formatting and corrected some typos	jcarmich

This installation was performed successfully on Windows Server 2003 Standard Edition SP1.
This installation was performed successfully on Windows XP Professional Version 2002 SP2.
The system should work on Windows 2000 Professional and compatible systems, but has not been tested on other Windows platforms.

NOTE: This software distribution will also work for Linux based systems, however Akaza provides a separate Linux distribution in tarball format, available at http://www.openclinica.org

Contents

1. About OpenClinica

Professional Open Source Solutions for the Clinical Research Enterprise

OpenClinica is a software platform for protocol configuration, design of Case Report Forms (CRFs), and electronic data capture, retrieval, and management. It is extensible, modular, standards-based, and open source.
More about OpenClinica: http://www.OpenClinica.org

Software License
OpenClinica is distributed under the GNU Lesser General Public License (GNU LGPL). For details see: http://www.openclinica.org/license or the LICENSE.txt file in this distribution.

Developer and Contact Information
Akaza Research, based in Cambridge, MA, provides open informatics solutions that address the needs of academic and non-profit institutions engaged in clinical, healthcare and biomedical research.

Akaza utilizes internally- and community-developed open source software and open standards to provide professional services for the clinical research enterprise. These open solutions enable Akaza's customers to effectively address the challenges of data management, compliance, and interoperability in the modern clinical and healthcare research environment.

Akaza Research
One Kendall Square
Bldg. 400, 4th Floor
Cambridge, MA 02139
phone: 617.621.8585
fax: 617.621.0065
email: contact@akazaresearch.com

For more about Akaza's products and initiatives see:
http://www.akazaresearch.com
http://www.OpenClinica.org

2. Software Dependencies

OpenClinica runs on top of any Servlet/JSP container that implements the Servlet 2.4 and JavaServer Pages 2.0 specifications from the Java Community Process. It was developed to run on Apache Jakarta Tomcat 5.5.17.

Currently, OpenClinica also runs on top of the Postgres relational database, but can be modified to work on top of an Oracle relational database. Using a JDBC (Java Database Connectivity) driver, the database connects to the web application and provides the data to the end-user.

Required:
Jakarta Tomcat 5.5.17
Java 2 Standard Edition Development Kit 5.0 Update 9
JavaServer Pages Standard Tag Library 1.0
Jakarta POI - Java API To Access Microsoft Format Files
Jakarta Digester - XML to Java Object Configuration
Postgres 8.1.4-1
Postgres JDBC Driver Version 8.0-310 JDBC 3

This installation guide will show you how to acquire and setup each of the required components and configure the OpenClinica web application.

3. Install Java

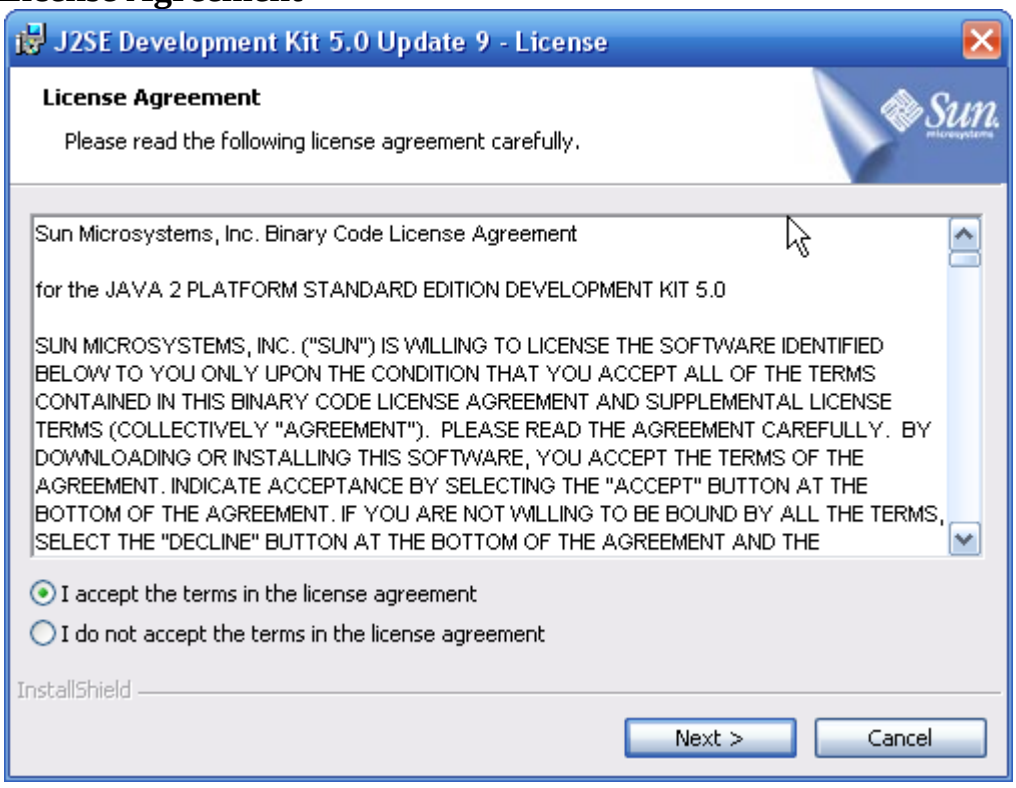
OpenClinica 2.0 is designed to run on a Java 2 SDK 1.5x platform. To avoid conflicts with other versions of Java, you should clear out any other Java installations on the system.

- Go to Start>Control Panel>Add Remove Programs, and remove all Java JRE and SDKs.
- Download J2SE Development Kit 5.0 Update 9
- Setup the Java 2 SDK

Windows offline installation (EXE)
Filename: jdk-1_5_0_09-windows-i586-p.exe
Size: 49.5 MB
Website: http://java.sun.com/javase/downloads/index.jsp

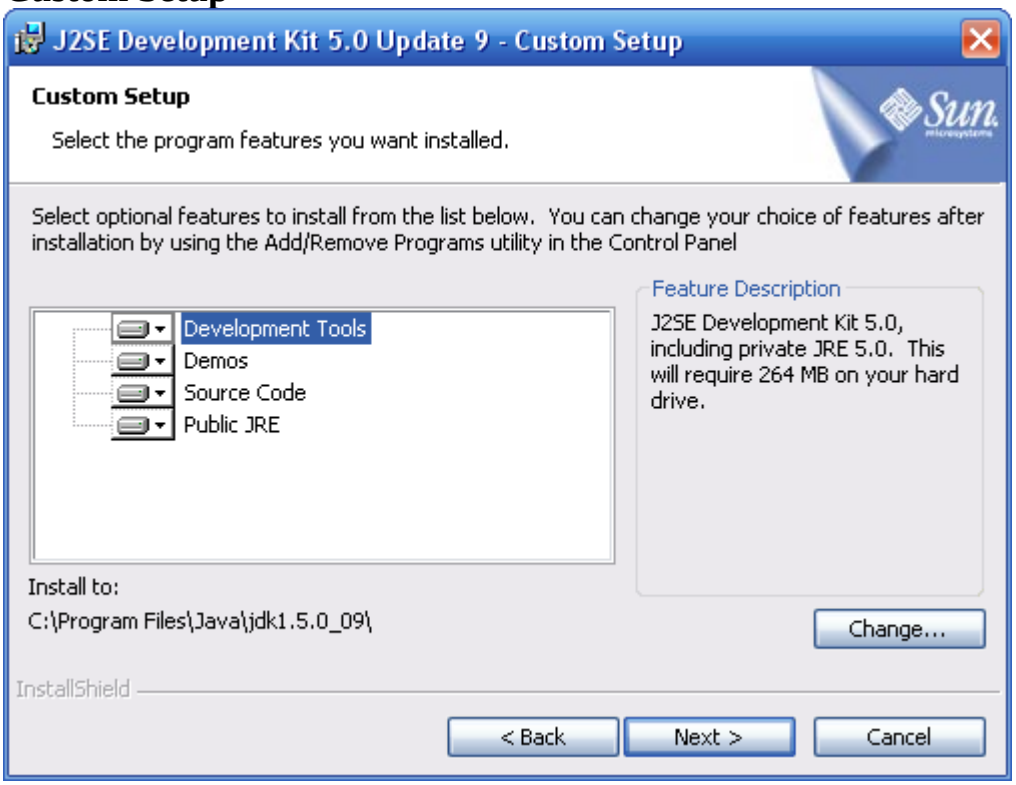
- Run jdk-1_5_0_09-windows-i586-p.exe

License Agreement



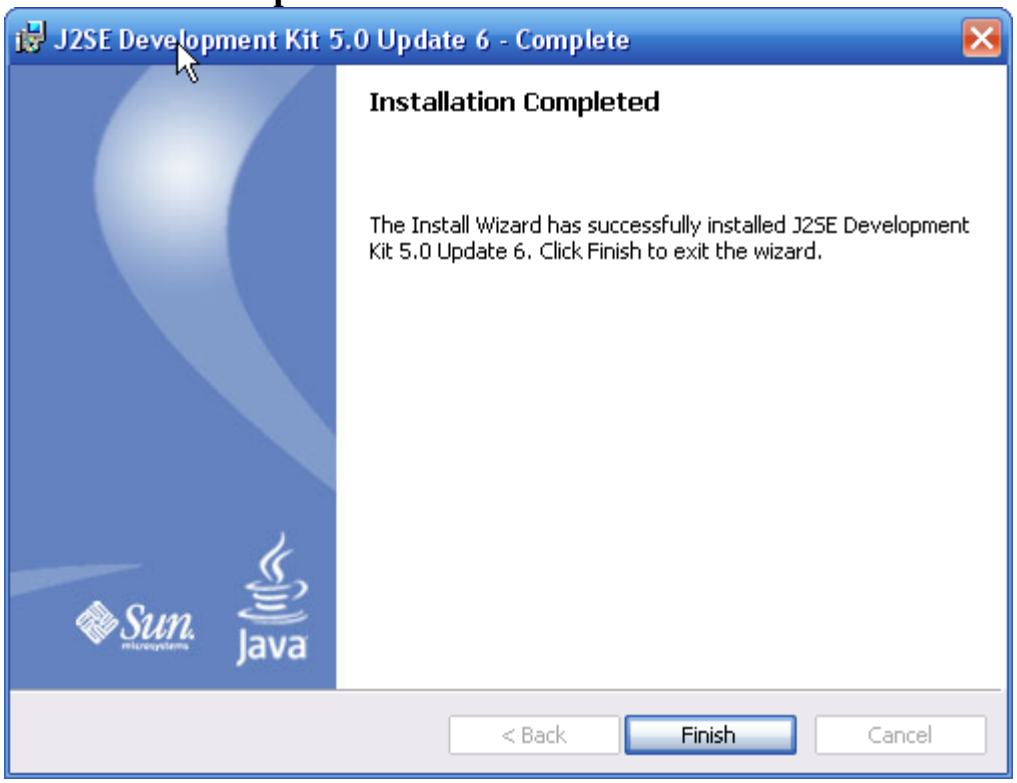
- Accept the terms of the licensing agreement.
- Click Next >

Custom Setup



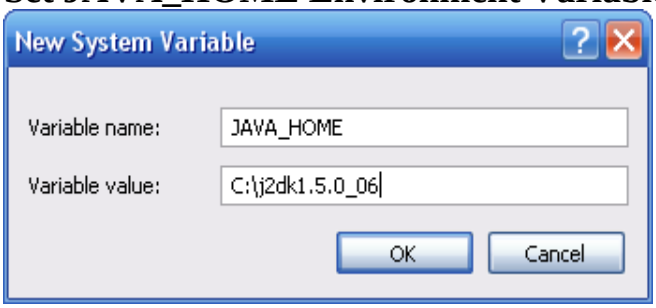
- Click Change…
- Install to the folder c:\j2sdk1.5.0_09\
- Click Next >
- Setup will begin transferring files.

Installation Completed



- Click Finish
- You may see a window asking you to restart your computer, click yes and restart your machine.
- Java 2 SDK is installed.

Set JAVA_HOME Environment Variable



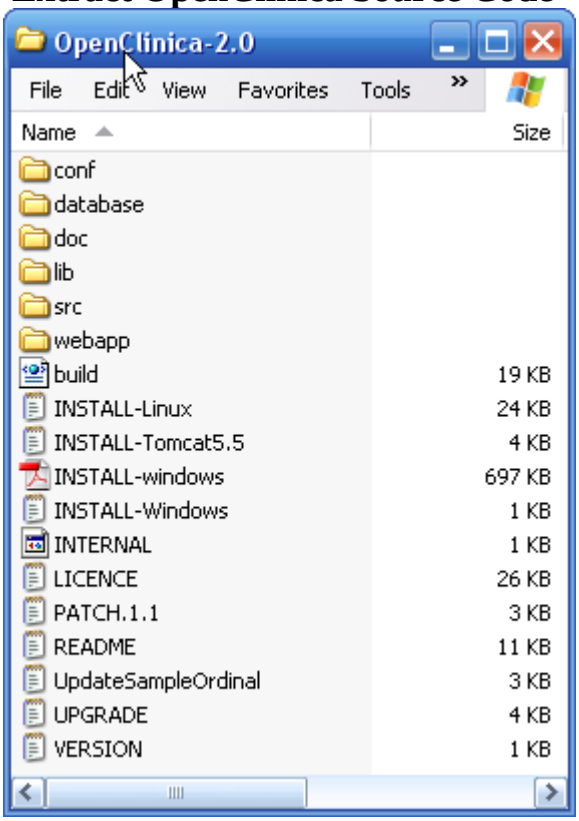
- Right click on My Computer, and select Properties
- Select the Advanced tab
- Click the Environment Variables button.
- In the System Variables group, click the New button
- Create a JAVA_HOME variable that has the path to the jdk (in this case probably JAVA_HOME=C:\j2sdk 1.5.0_09).

4. Install OpenClinica Source Code

To install OpenClinica, you must first acquire the source code and install it on the server.

Download OpenClinica 2.0 (Windows package)
Filename: OpenClinica-2.0.zip (ZIP)
Website: http://openclinica.org (you must register)

Extract OpenClinica Source Code



- Extract the files
- Create a folder c:\openclinica\
- Extract archive into c:\OpenClinica\, you should end up with a folder c:\OpenClinica\OpenClinica-2.0\ which contains the distribution.

Note: Due to documentation changes prior to release, your source code distribution may have slightly different documentation files in this root directory.

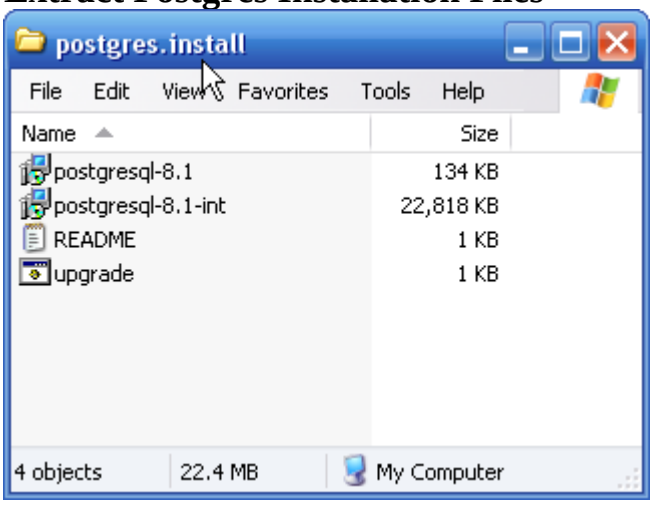
5. Install PostgreSQL

The default installation of OpenClinica uses a PostgreSQL database. PostgreSQL is an open source application and can be installed to the Window platform as follows.

- Download postgresql-8.1.4-1.zip

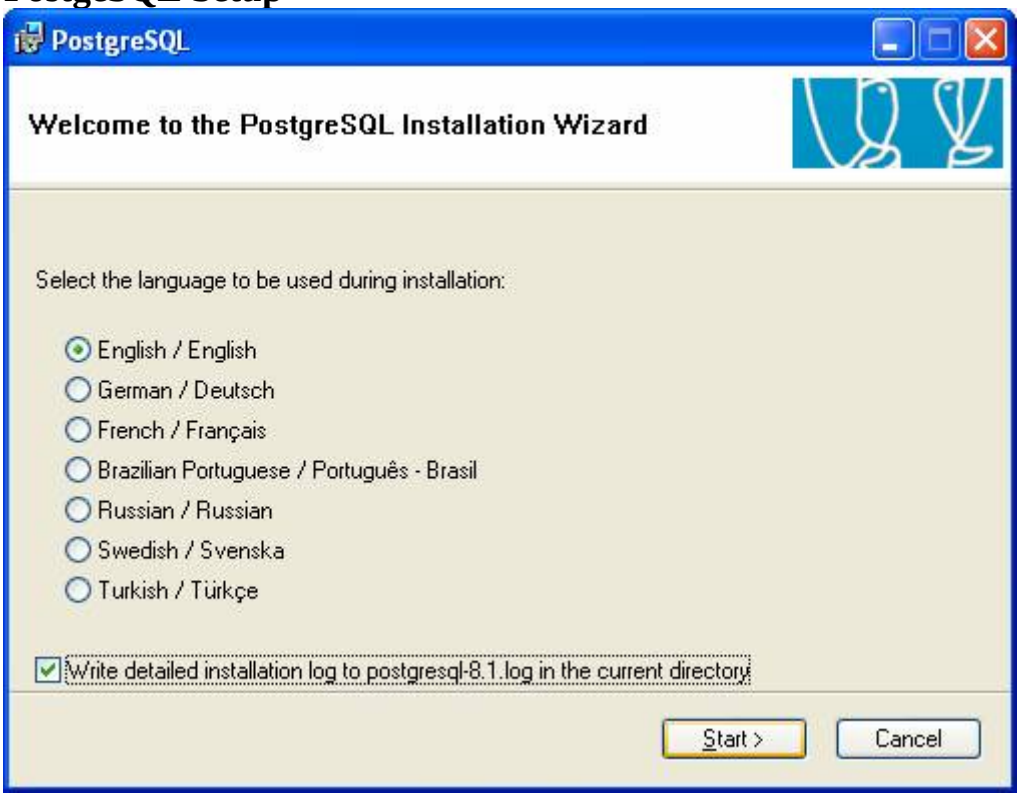
Windows binary distribution (ZIP)
Filename: postgresql-8.1.4-1.zip
Size: 21.8 MB
Website: http://www.postgresql.org/ftp/binary/v8.1.4/win32/

Extract Postgres Installation Files



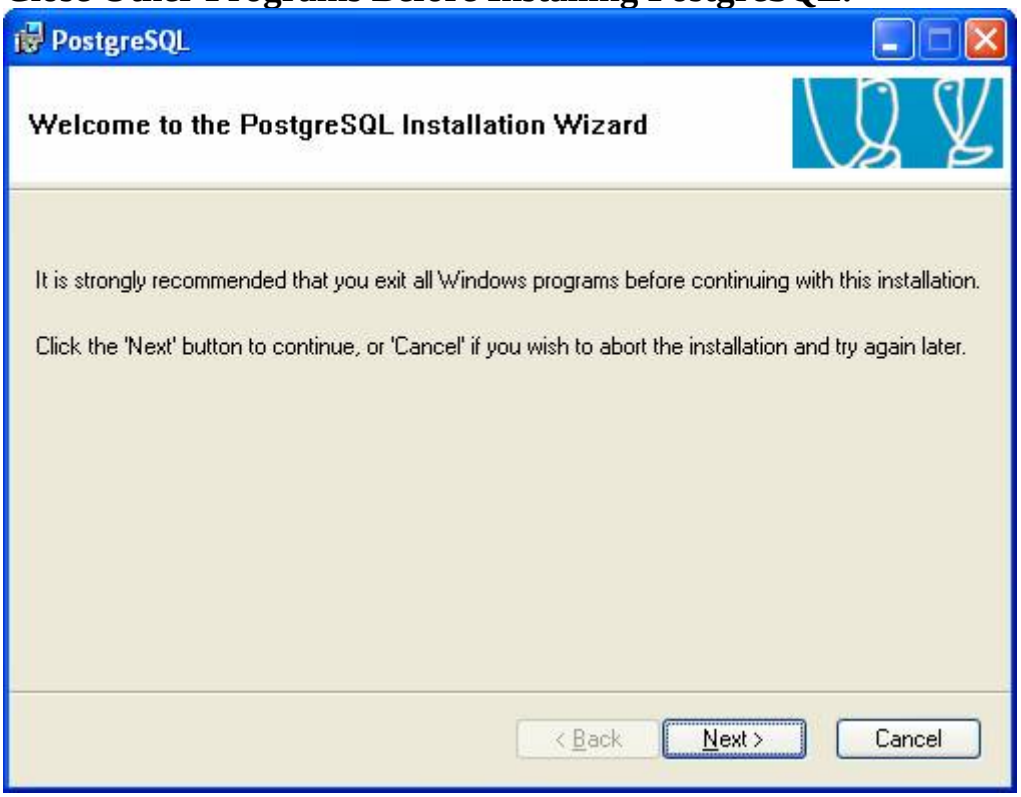
- Extract the files
- Create a folder c:\postgres.install
- Extract archive there, you should end up with some Windows installation files
- Run *postgresql-8.1.msi*, the PostgreSQL Installation Wizard Opens

PostgeSQL Setup



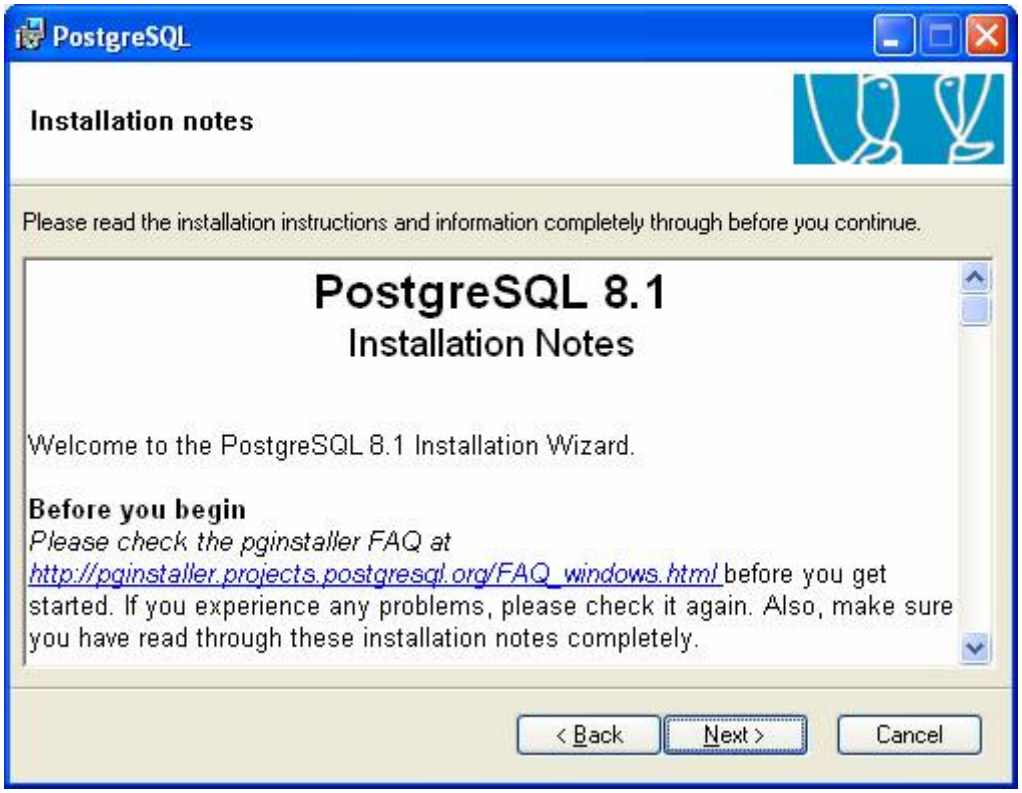
- Choose your language (English)
- Check “Write detailed installation log to postgresgl-8.1.log in the current directory.”
- Click Start >

Close Other Programs Before Installing PostgreSQL.



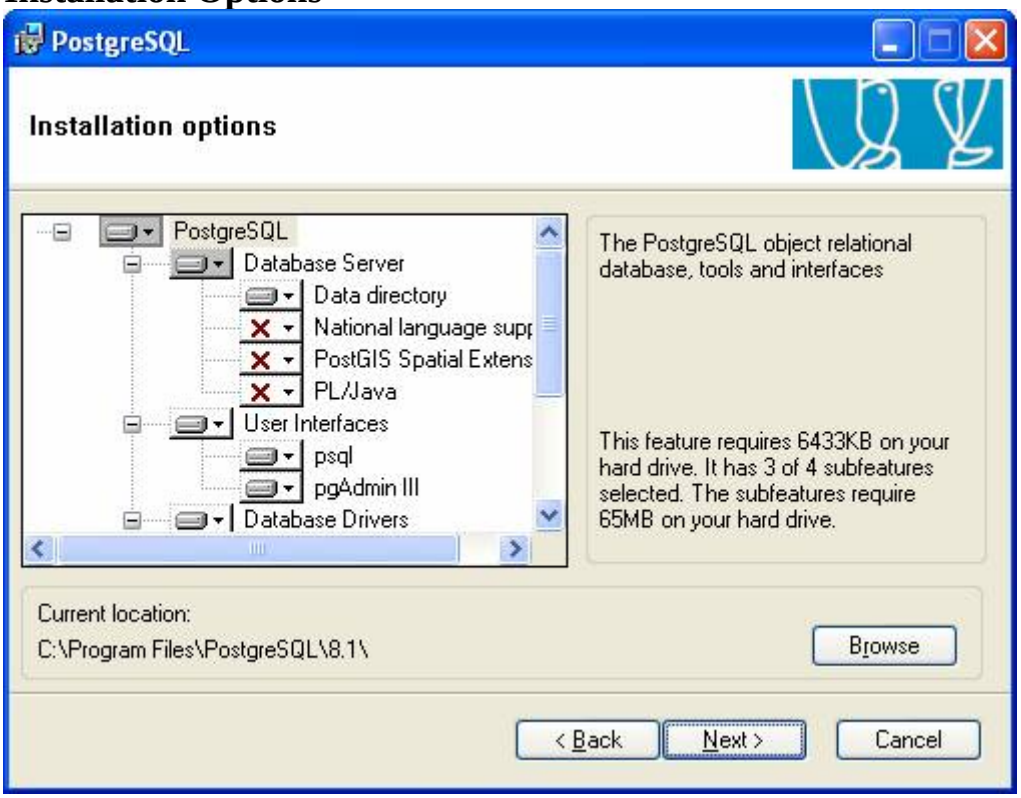
- Click Next >

Installation Notes



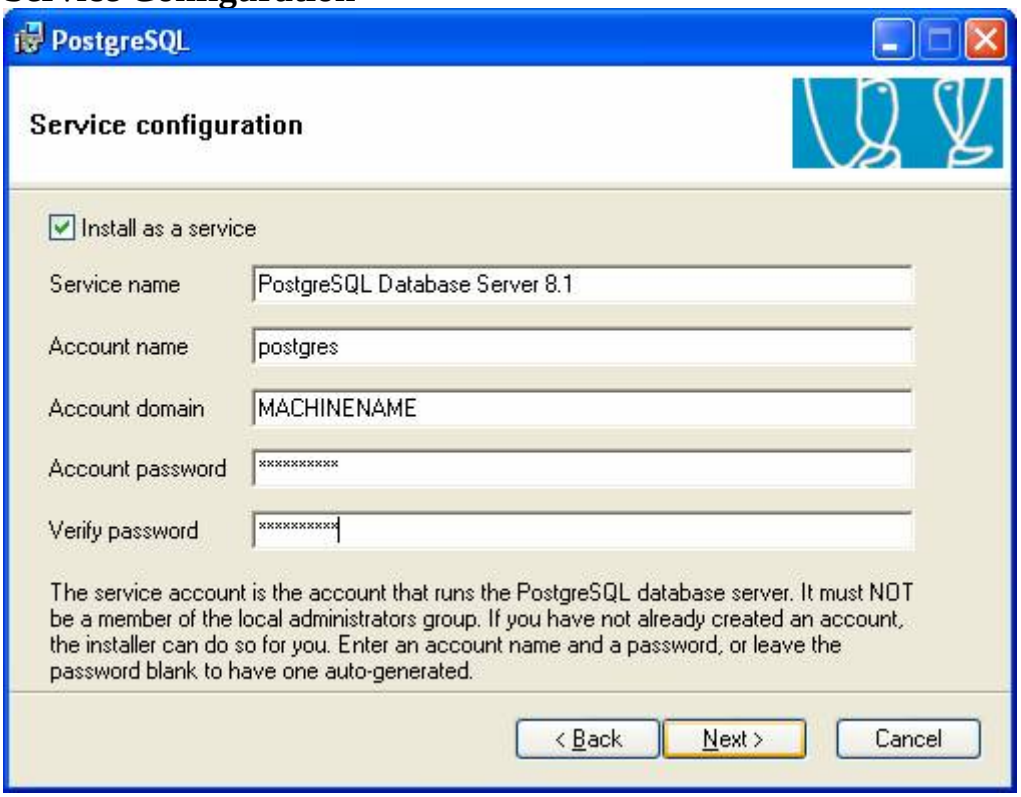
- Click Next >

Installation Options



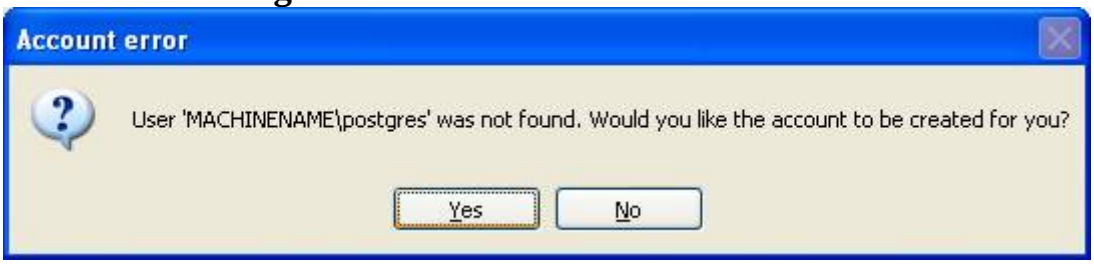
- Click Next >

Service Configuration



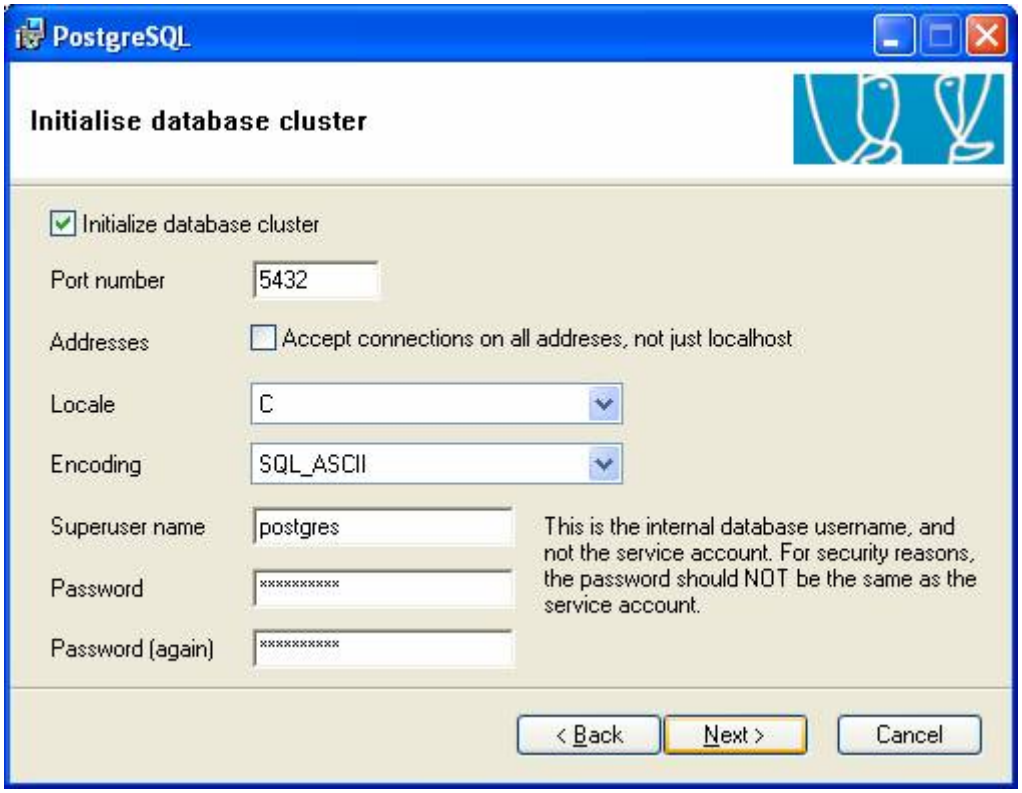
- Now you will need to create a Windows user that the database will operate as.
- Set and verify a strong account password for the service account ***postgres***, you will need this when administering PostgreSQL as a service. You will not need this password for the rest of the installation.

Create User Postgres



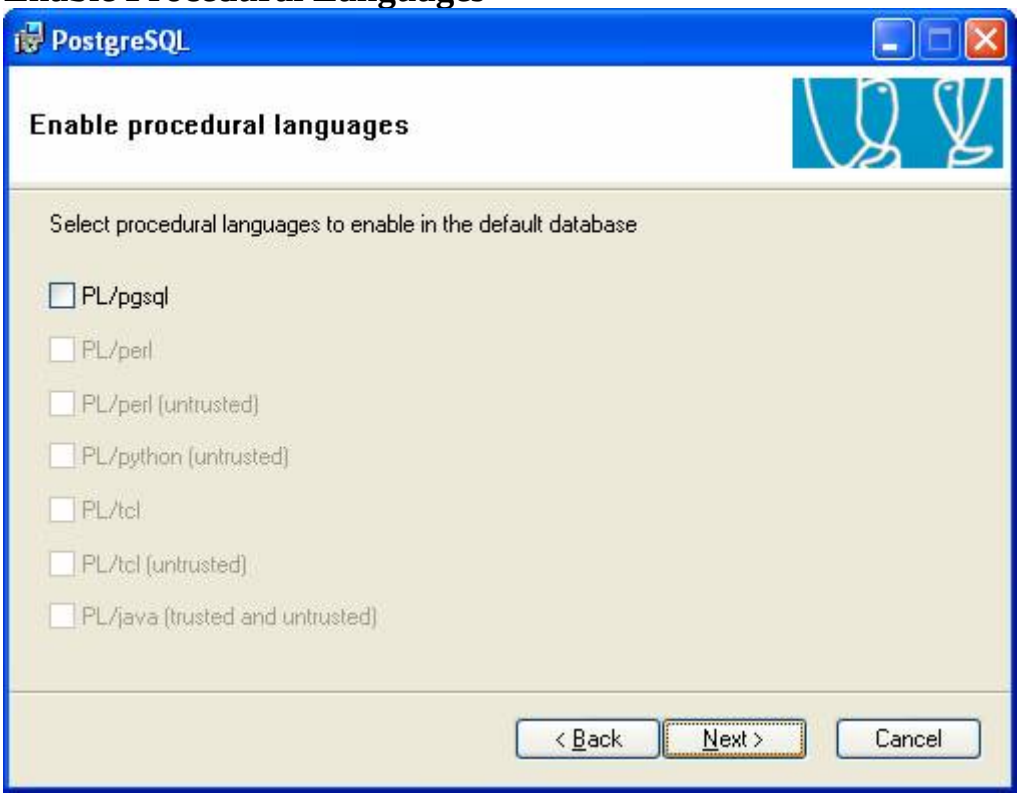
- A window may display the following message: “Account Error: User MACHINENAME/postgres can not be found. Would you like the account to be created for you?”
- This is normal, click Yes.

Initialize Database Cluster



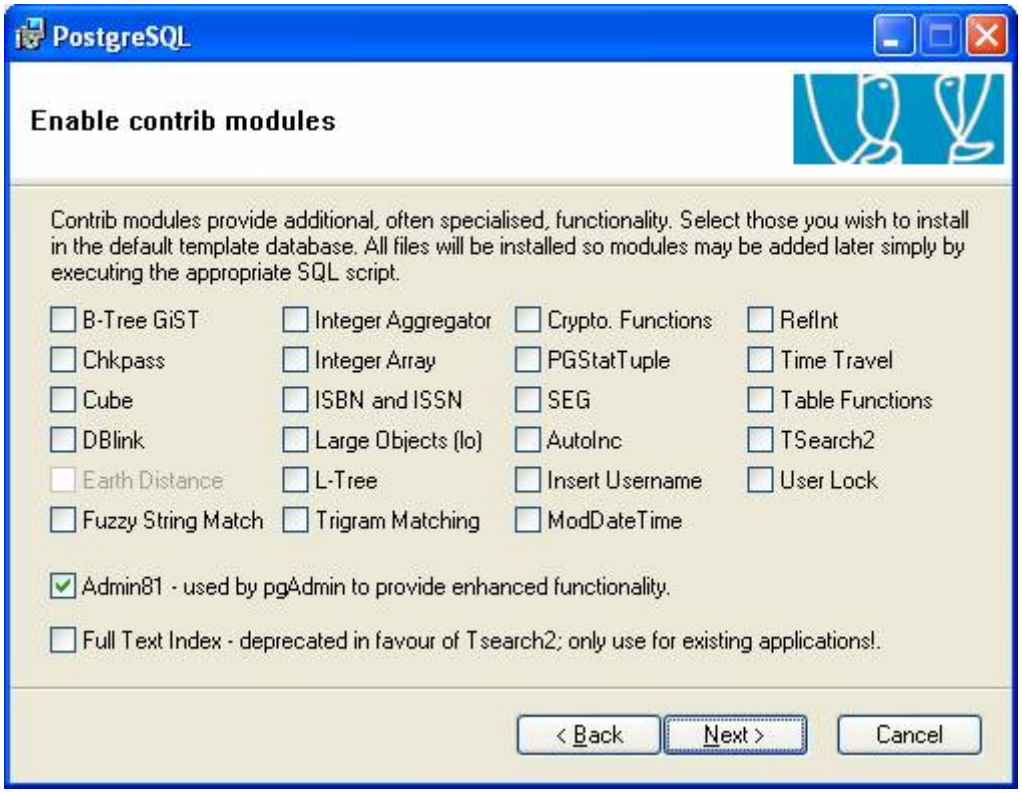
- Set and verify a password for the database superuser ***postgres***.
- Record this password; you will need this username and password when setting up the OpenClinica database.
- Click Next >

Enable Procedural Languages



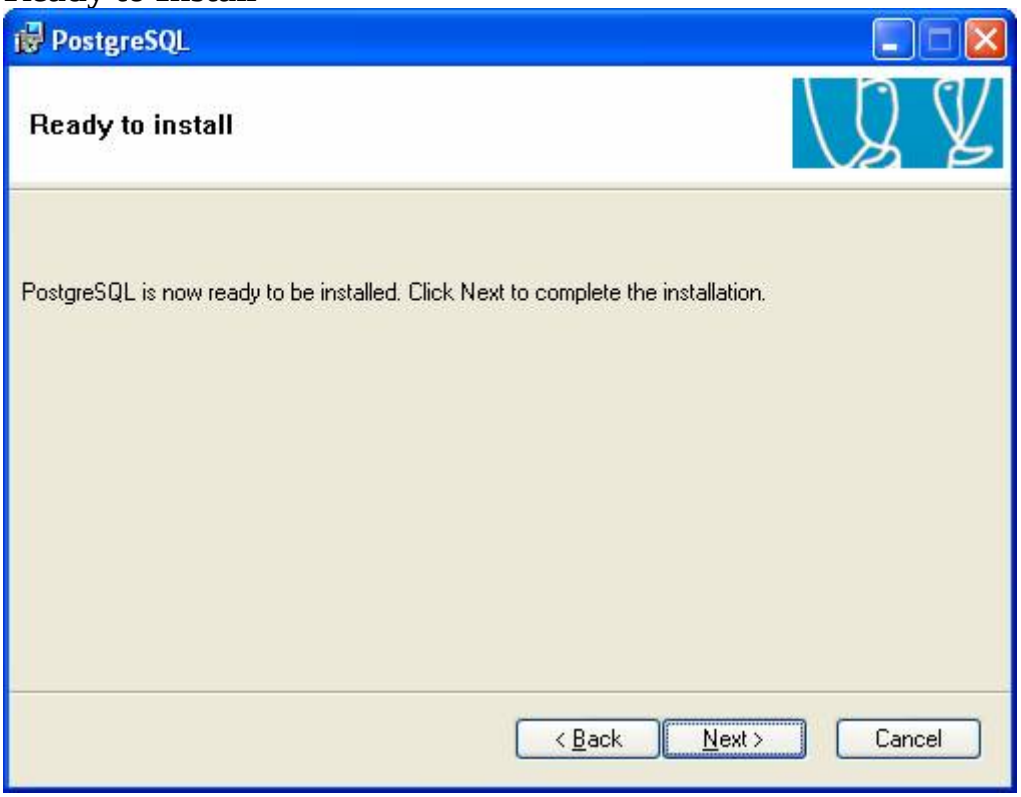
- Uncheck the PL/pgsql language.
- Click Next >

Enable Contrib Modules



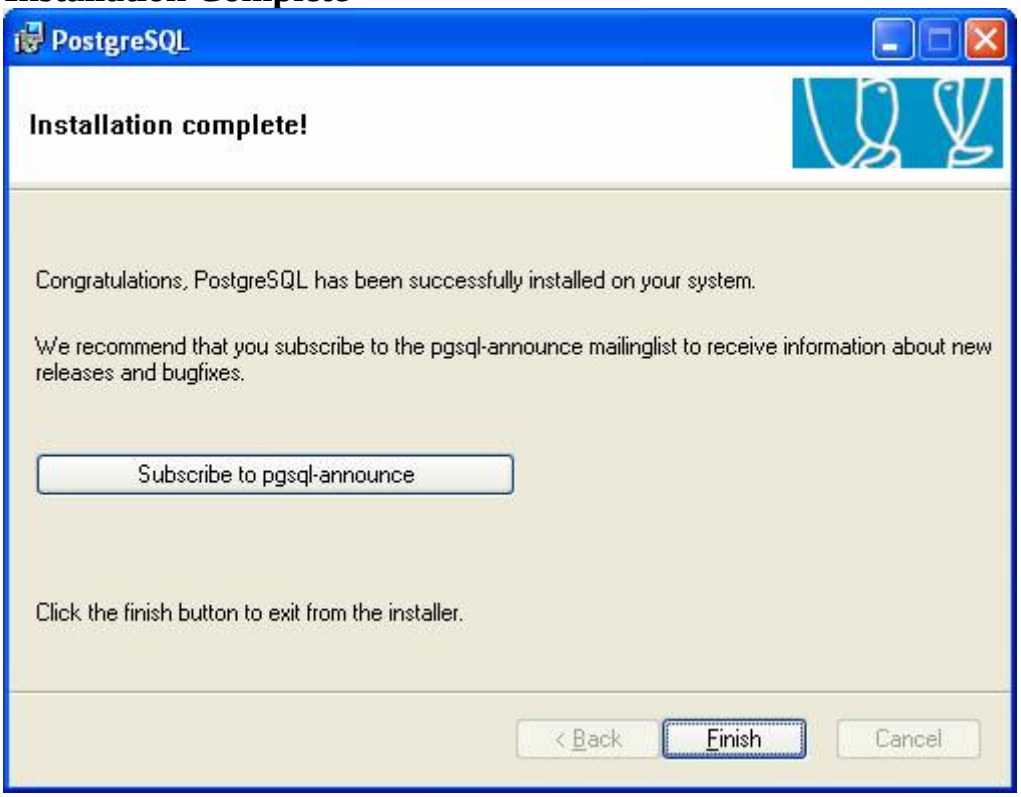
- Click Next>

Ready to Install



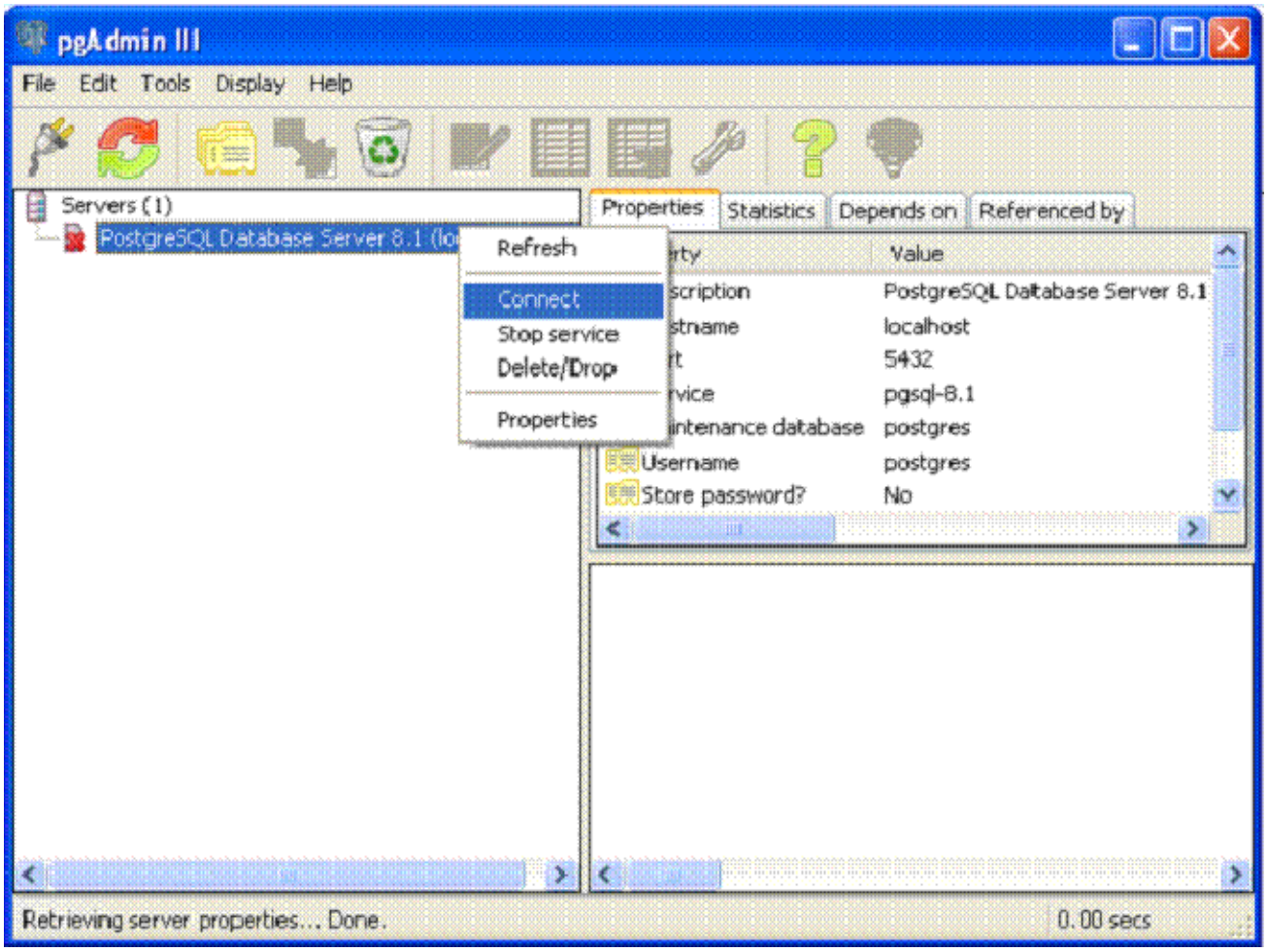
- Click Next>
- Setup will begin transferring files.

Installation Complete



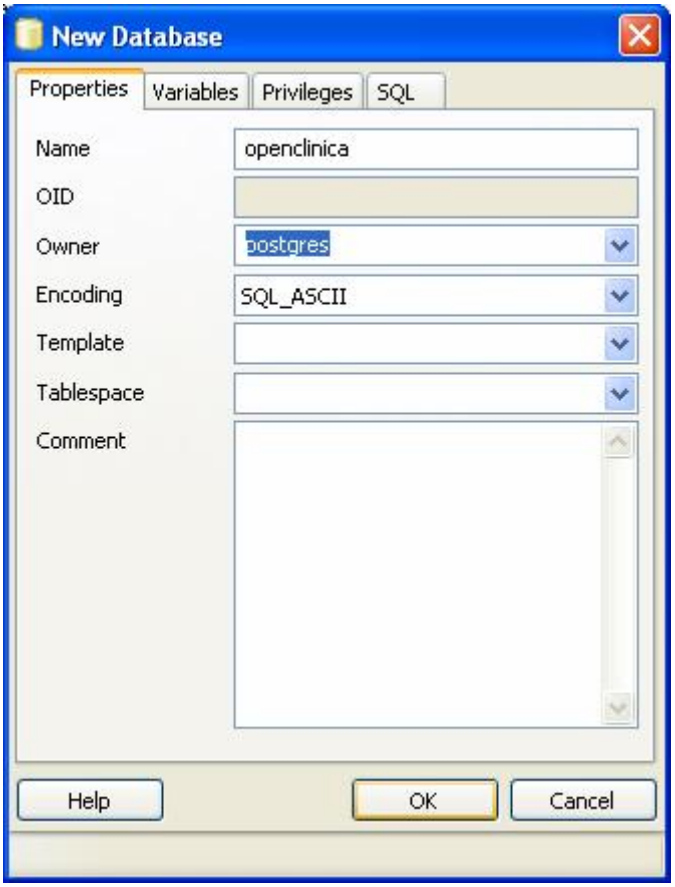
- Click Finish.
- PostgreSQL is now installed. Now we need to configure a database that the OpenClinica application will use.

6. Configure PostgreSQL



- Open the pgAdminIII application. Go to Start>Programs>PostgreSQL 8.1 > pgAdminIII. The pgAdminIII interface opens.
- Right click on the PostgreSQL Database Server and connect to the database server.
- Login to the database server. Enter the password you setup in the PostgreSQL installation.

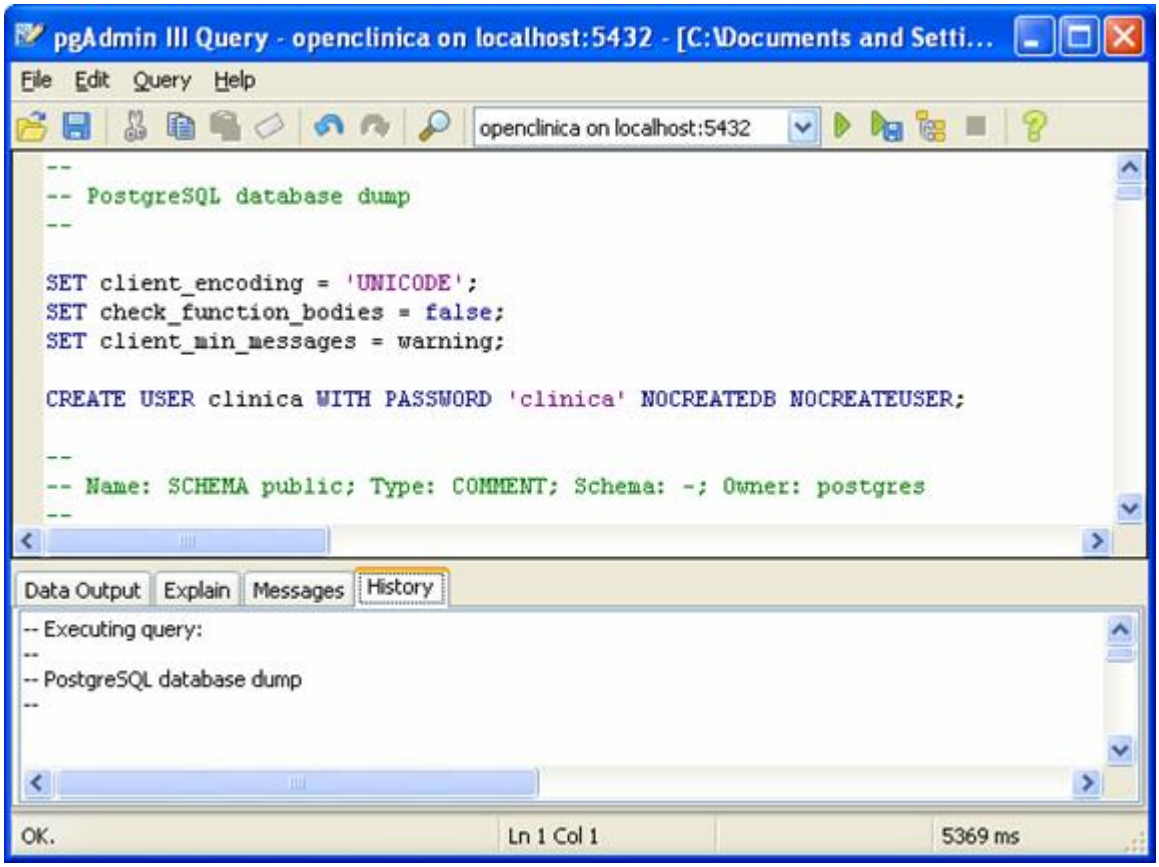
Create a Database



- Right click the Databases item and select New Database.
- Database properties: Name the database ***openclinica*** and set the owner to ***postgres.***

7. Create Database Tables

This is currently a multi-step process, to facilitate easy upgrading. In brief, the process for a fresh installation of 2.0 is to first create a 1.1 compatible database and then apply a schema patch to bring the database to version 2.0 compatibility.



- Select the OpenClinica database. Click Tools>Query tool to open the SQL editor.
- Select File>Open from the menu
- Open *OpenClinica_1.1_db_tables_only.sql* in the *C:\OpenClinica\OpenClinica-2.0\database\PostgreSQL\1.1\install* folder.
- Select Query>Execute
- From the same screen, open and execute *C:\OpenClinica\OpenClinica-2.0\database\PostgreSQL\1.1\install\basecase_data_1.1.sql*
- From the same screen, open and execute *C:\OpenClinica\OpenClinica-2.0\database\PostgreSQL\1.1\upgrade\schema_patch_1.1_to_2.0.sql*
- Close pgAdminIII

Note: you may receive warnings or error messages while executing these scripts, this is normal and should not affect installation.

8. Install Tomcat

- Download Apache Tomcat 5.5.17, use the Windows Executable Version

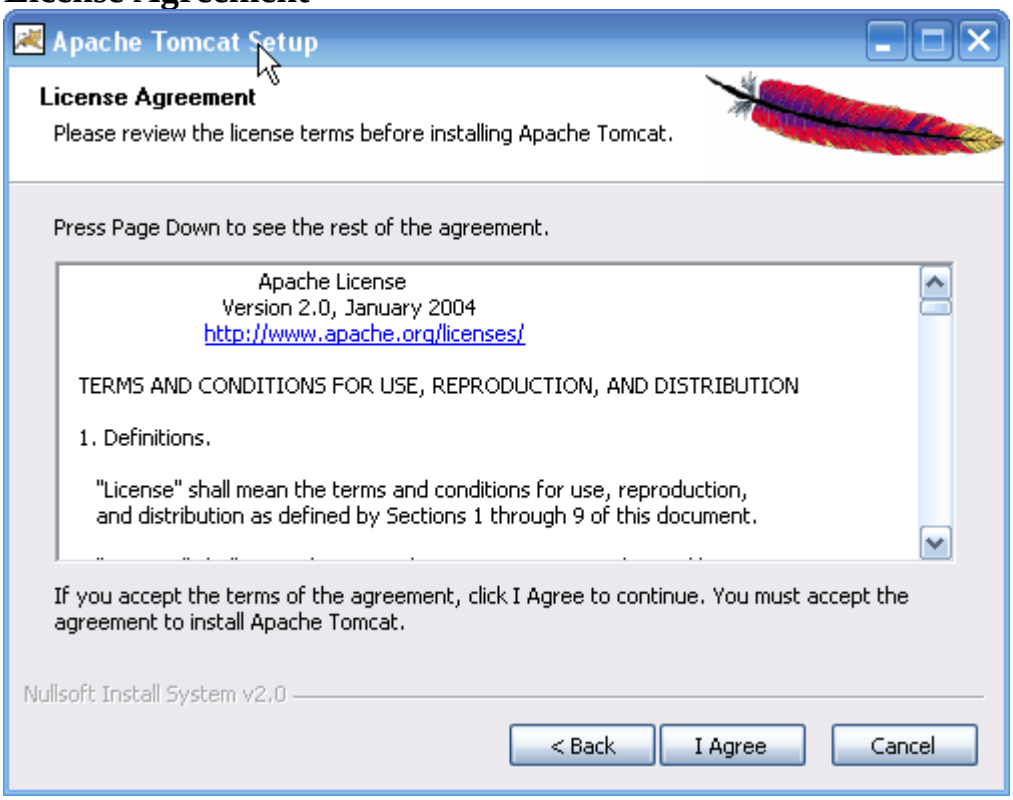
Windows binary distribution (EXE)
Filename: apache-tomcat-5.5.17.exe
Size: 4.85 MB
Website: http://archive.apache.org/dist/tomcat/tomcat-5/v5.5.17/bin/

- Create a folder c:\tomcat5
- Run jakarta-tomcat-5.5.17.exe, the Apache Tomcat Setup installation wizard appears.

Tomcat Setup

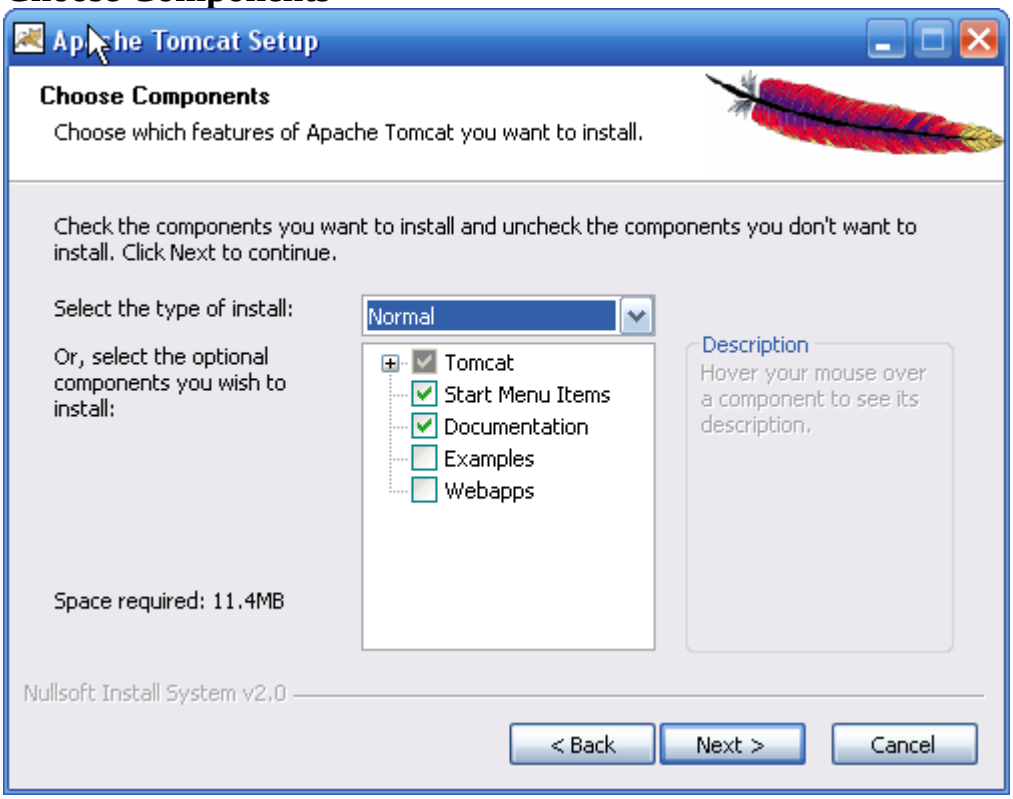
- Click Next >

License Agreement



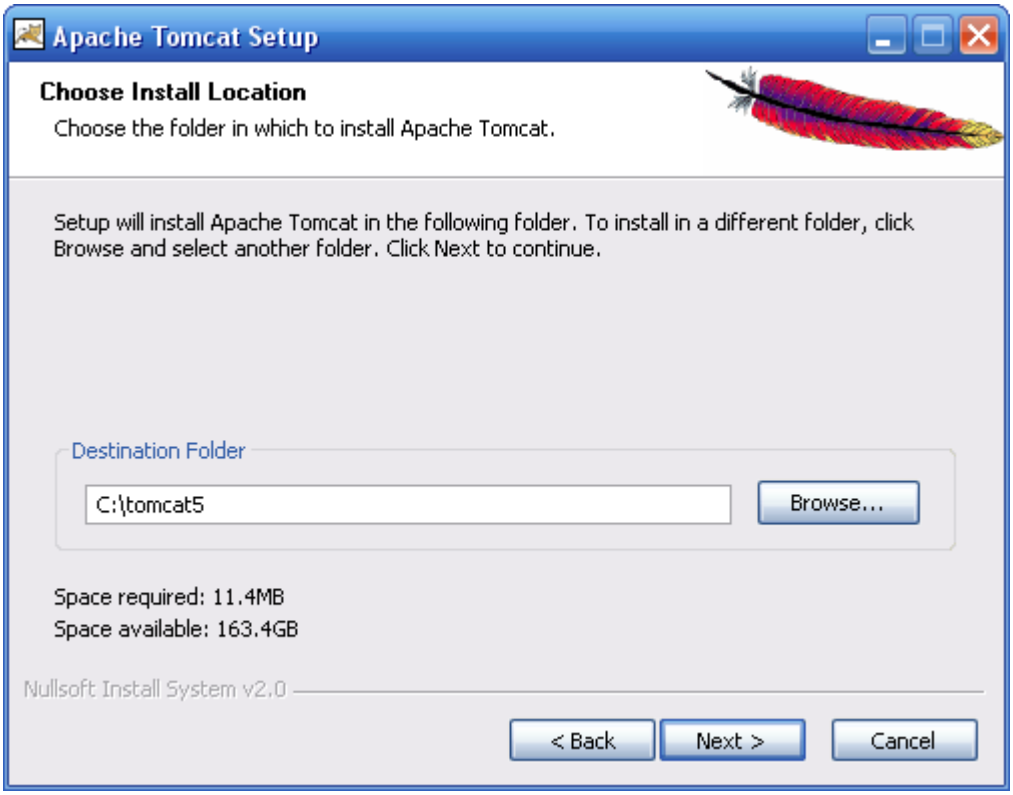
- Click I Agree

Choose Components



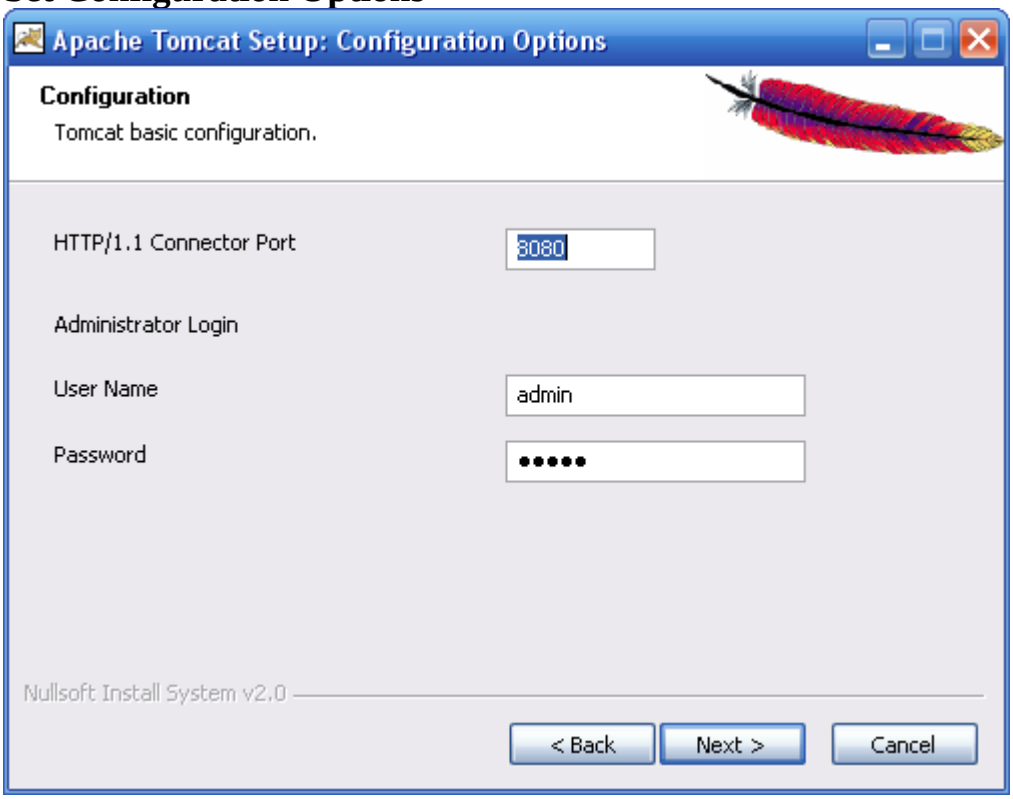
- Choose a Normal install.
- Click Next >

Choose Install Location



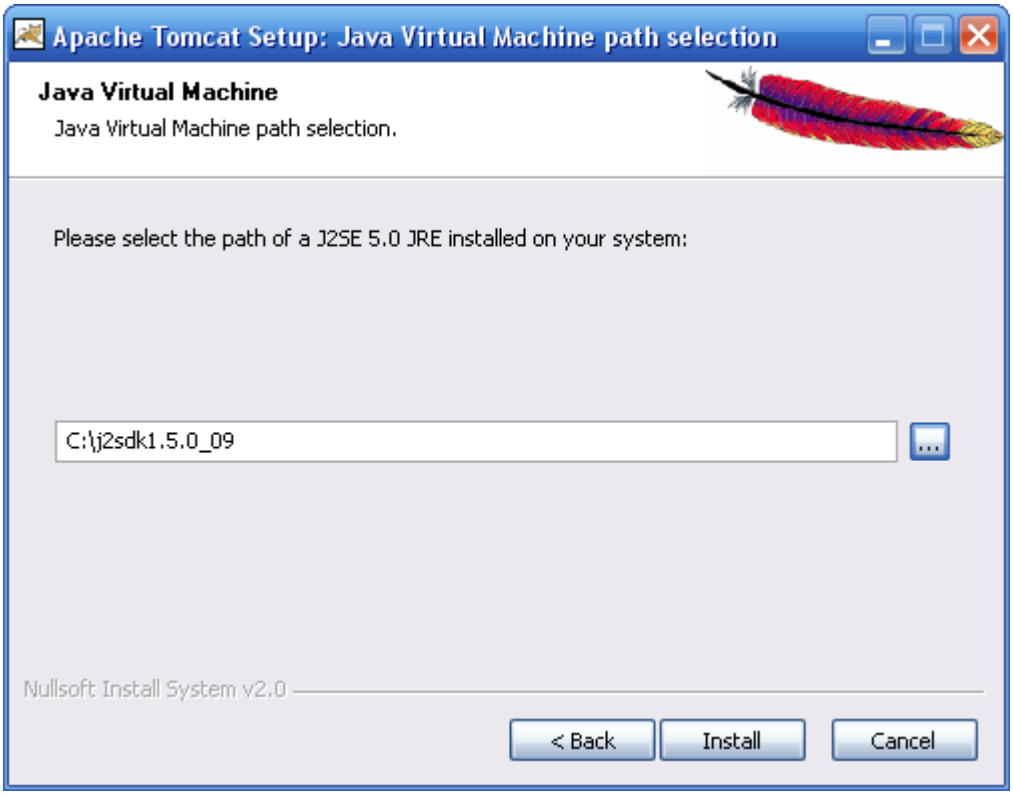
- Change the destination folder to C:\tomcat5
- Click Next >

Set Configuration Options



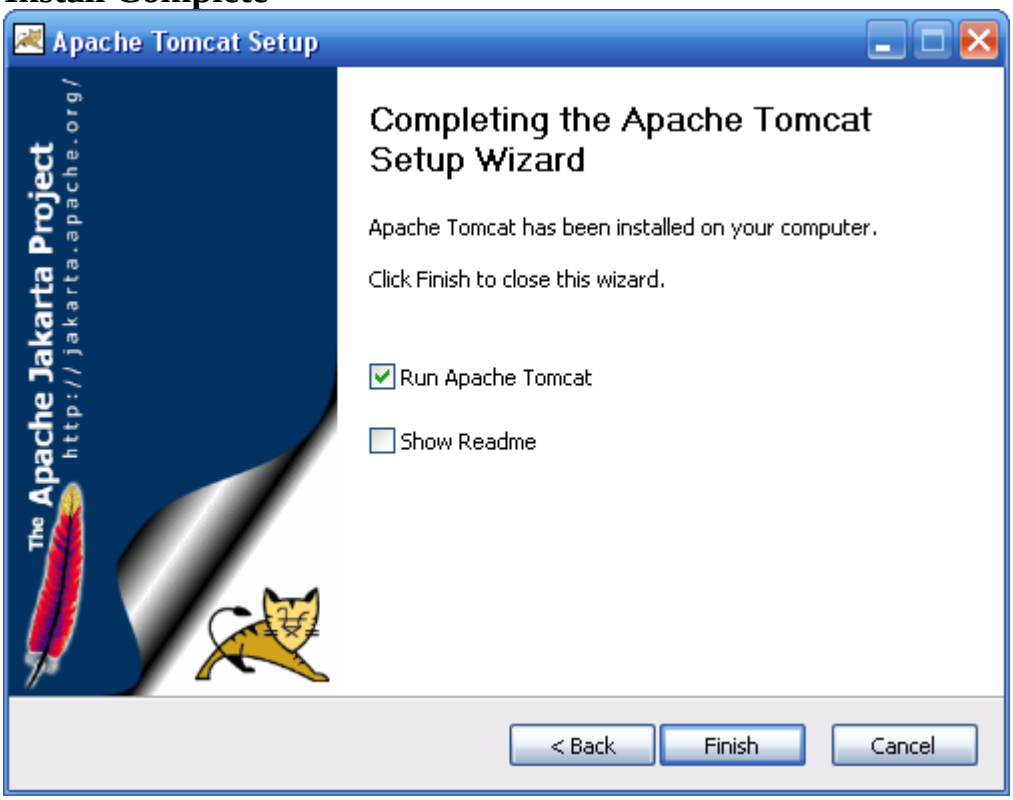
- HTTP Port should be 8080
- Type a password for the admin login account. You will need this password to administer the Apache Tomcat server.
- Click Next >

Locate the Java Virtual Machine



- The path to JVM should be c:\j2sdk1.5.0_09\
- Note: do not use c:\ j2sdk1.5.0_09\jre, Tomcat will still install, but will be missing libraries you need to run OpenClinica.
- Click Install
- Setup will begin transferring files.

Install Complete



- Check the Run Apache Tomcat checkbox.
- Uncheck the Show Readme checkboxes.
- Click Finish
- Tomcat is now installed

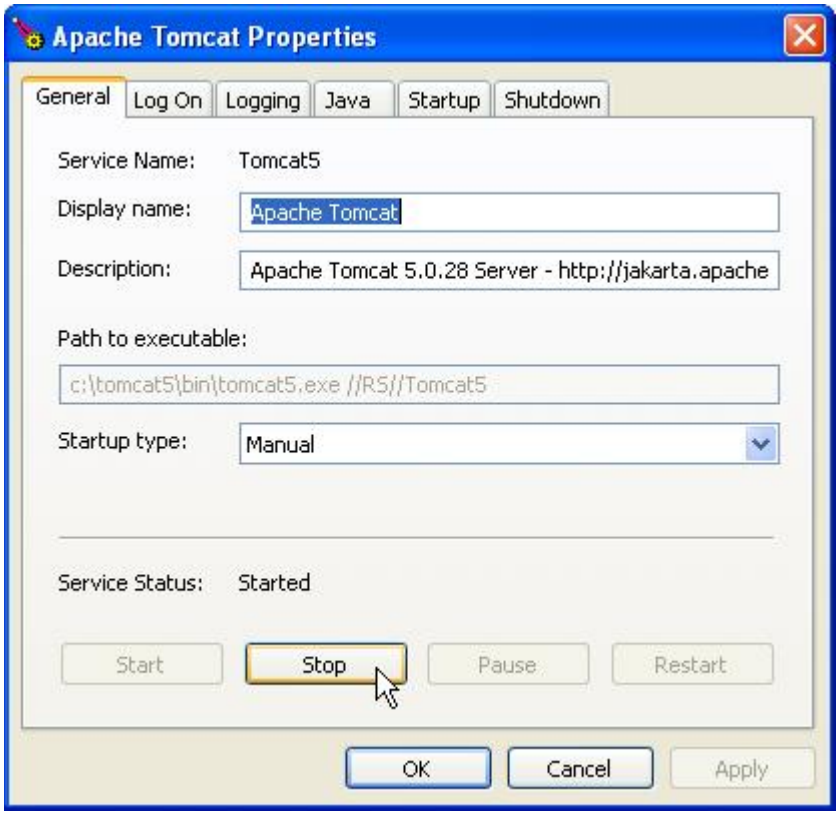
Set CATALINA_HOME Environment Variable

- Right click on My Computer, and select Properties
- Select the Advanced tab
- Click the Environment Variables button.
- In the System Variables group, click the New button
- Create a CATALINA_HOME variable that has the path to the jdk (in this case probably CATALINA_HOME=C:\tomcat5).

9. Configuring the Web Application

- Copy C:\OpenClinica\OpenClinica-2.0\lib\OpenClinica.war to C:\tomcat5\webapps

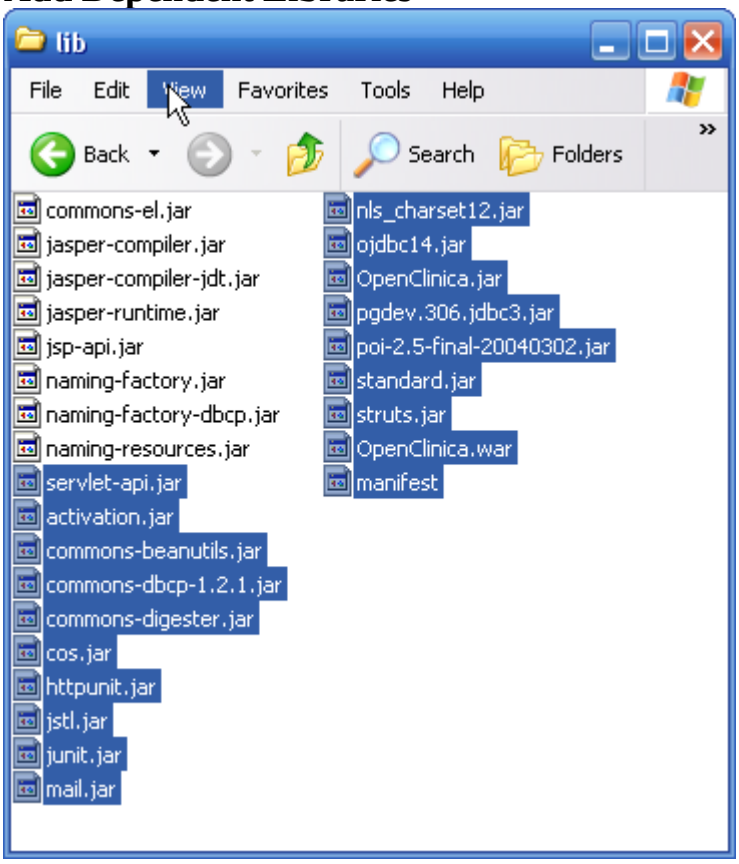
Start Tomcat if Necessary



- Make sure Tomcat is running.
- You should see the Tomcat monitor in the system tray. Click this to bring up the Apache Tomcat properties window. (You can also reach use the Windows services applet)
- Verify that Tomcat automatically deployed to OpenClinica web application. Go to *c:\tomcat5\webapps* and verify that the folder *OpenClinica* has been created

Note: You may have to restart Tomcat to kick-start the process.

Add Dependent Libraries



- Copy all library files from C:\OpenClinica\OpenClinica-2.0\lib to C:\tomcat5\common\lib.

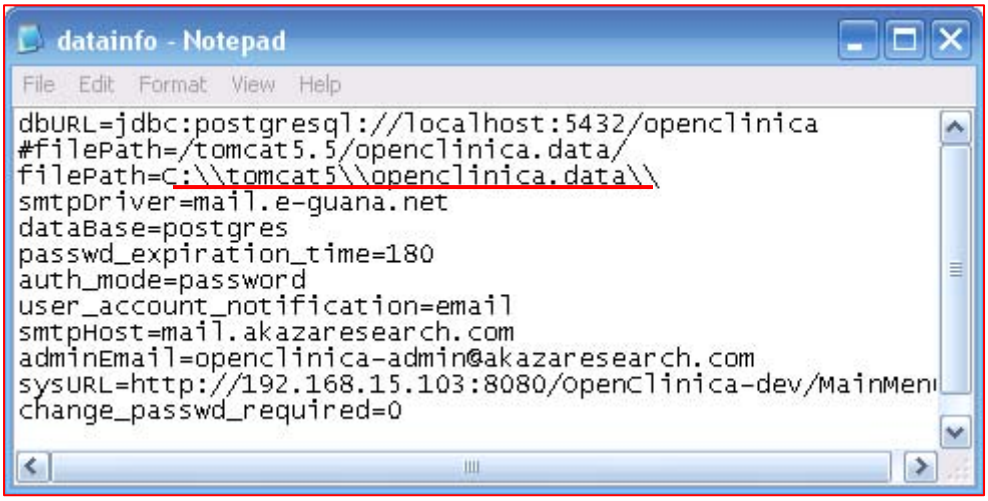
Note: You may need to overwrite some files. If you have difficulties due to locked files, try shutting down Tomcat before completing this step. Also, the dependent libraries changed just prior to release so they may not match up exactly with the diagram in this document.

Create data folders

- Create a directory c:\tomcat5\openclinica.data
- This directory will store all CRF originals, templates, and datset files.

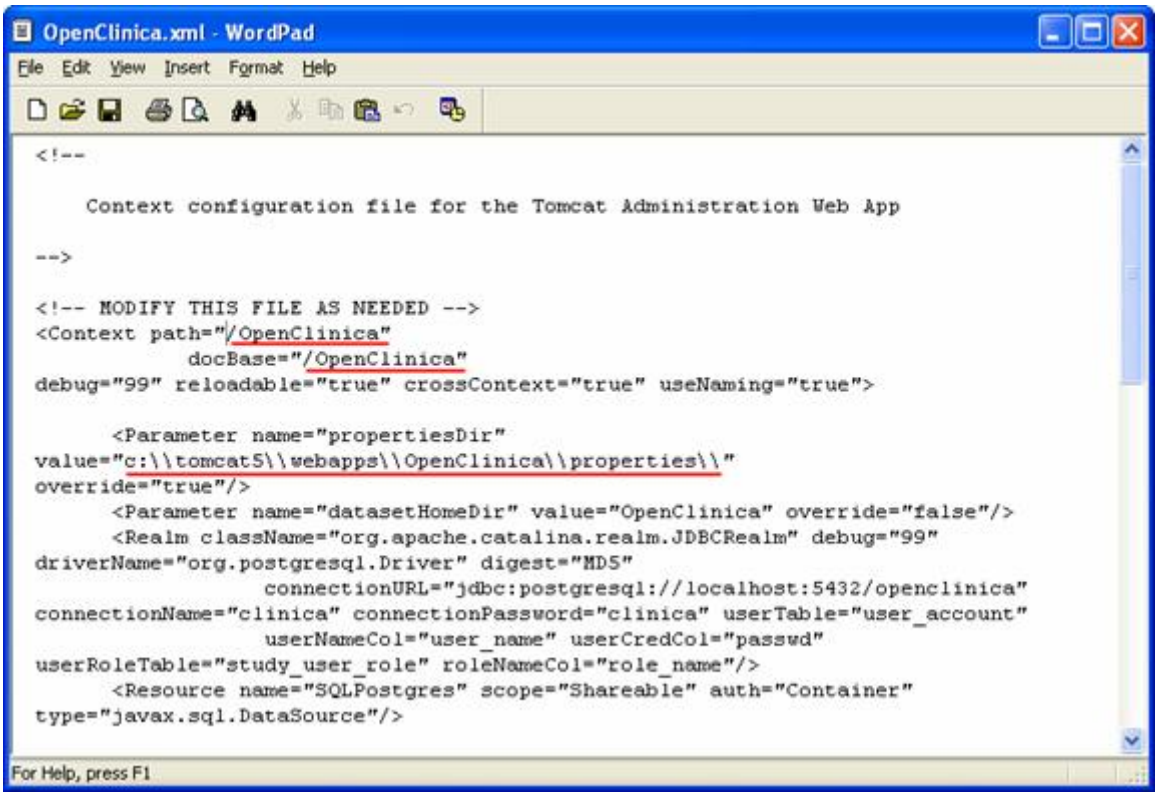
Note: This folder schema has changed somewhat with 2.0. Please refer to the upgrade.txt file for information on fixing old file structures created by versions of OpenClinica < 2.0..

Modify Configuration Files for Server Specific Settings



- Open C:\tomcat5\webapps\OpenClinica\properties\datainfo.properties file in your text editor and modify it to use the IP addresses of your server, database, and mail servers.
- You must be sure to comment out the linux filePath and uncomment the windows filePath, and be sure the filePath references the data folder you just created.

Note: The screenshots use the loopback address (127.0.0.1), you can use this address to verify the installation, but you will have to go back and change this to the server's address before you can use the application on an intranet or over the web.)



- Copy C:\OpenClinica\OpenClinica-2.0\conf\OpenClinica.xml to C:\tomcat5\conf\Catalina\localhost .
- Open C:\tomcat5\conf\Catalina\localhost\OpenClinica.xml in your text editor.
- Modify the path and docbase attributes of the Context node to “/OpenClinica”
- Modify the value attribute of the propertiesDir node to “c:\\tomcat5\\webapps\\OpenClinica\\properties\\” (Note the escaped backslashes.)

10. Setting up the Datamart

In order to use the Extract Data features, you need to setup the application's datamart. This pulls data from various tables so that it can be queried. You can create the datamart manually by executing the pg_data_warehouse.sql script, located in OpenClinica's conf folder.

You will probably want to setup this script to execute regularly, such as on a daily basis. To do this, you will want to execute the following AT commands on the server. These will setup the script to be executed daily at midnight.

- Execute the C:\OpenClinica\OpenClinica-2.0\conf\setup_data_warehouse.bat batch script. This sets seven scheduled tasks, one for each day of the week. One of these commands looks like this:

  AT 00:00 /every:SUNDAY java -cp C:\OpenClinica\OpenClinica-2.0\conf;C:\OpenClinica\OpenClinica-2.0\conf\postgresql-8.1-41.jdbc3.jar UpdateWarehouseJDBC C:\OpenClinica\OpenClinica-2.0\conf\update_warehouse_jdbc.properties

- You may need to change the paths in setup_data_warehouse.bat to fit your installation folders.

- You can run AT with no parameters to verify that the jobs have been loaded.

- You will probably need to change the parameters in update_warehouse_jdbc.properties with the location of the pg_data_warehouse.sql file, and the database name, user, and password.

11. **Verify your Environment**

- Open a command line and type set JAVA_HOME and verify that the variable is set to your Java directory (in this case probably JAVA_HOME=C:\j2sdk1.4.2_12)

- Open a command line and type set CATALINA_HOME and verify that the variable is set to your Tomcat directory (in this case probably CATALINA_HOME=c:\tomcat5)

- Open a web browser on the server to http://localhost:8080 and verify that Tomcat is up and running.

- Open a web browser on the server to http://localhost:8080/OpenClinica and verify that the web application loads. You should see the OpenClinica login screen.

- Login to the system. The default username is *root* and the password is *12345678*. There are two other default users on the system, *demo_director* and *demo_ra* with the passwords *demo1234*.

- Add some users. Don't forget to change the root user's password!

At this point the application has been installed correctly. You should now spend some time setting up a secure environment, and then creating your studies.

- You should change the password for the database. You will need to go into pgAdminIII and change it for the *clinica* user, and then go into the C:\tomcat5\conf\Catalina\localhostOpenClinica.xml file, change the *connectionPassword* attribute of the *Realm* node, and change the value of password in *ResourceParams* node.

- You should set up SSL for Tomcat. More information is available here: http://tomcat.apache.org/tomcat-5.0-doc/ssl-howto.html

- You will need to change the localhost URLs in the configuration files (datainfo.properties and OpenClinica.xml) to match your desired server settings. If you are planning on using OpenClinica over the web this will need to be your server's or proxies URL, and you may need to open the Tomcat port.

- Enterprise support services, mailing lists, and additional resources for OpenClinica are available at http://www.openclinica.org.

12. **Known Issues**

- Please note that these instructions are for new installations of OpenClinica 2.0. If you would like to upgrade a previous version of OpenClinica, please refer to the UPGRADE_2.0.txt file.

- You can see the OpenClinica login page, but have trouble logging into OpenClinica. Check the applications logs: *c:\tomcat5\logs\openclinica_log2005-12-30.txt*

- For exceptions caused by the JDBC driver try copying the jdbc driver files from *C:\Program Files\PostgreSQL\8.1.4-1\jdbc* to *C:\tomcat5\common\lib*

- For complete details about this release, please refer to the README.txt file.