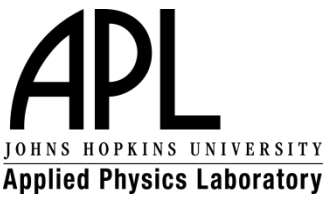
OpenESSENCE Installation Guide

Prepared by The Johns Hopkins University Applied Physics Laboratory, for the Armed Forces Health Surveillance Center, Division of GEIS Operations



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Installation Overview

OpenESSENCE requires several software products and some environment customization to function properly:

- **Java Development Kit** – the software runtime used for OpenESSENCE execution
- **PostgreSQL** – an open-source database for surveillance data
- **Apache Tomcat** – a web application server, hosting the OpenESSENCE software and providing it to browser users

  NOTE: Version numbers of these products may change over time and may not exactly match versions seen in screen shots in this guide.

This guide describes the installation of these products, customization of your environment, and deployment of the demo version of OpenESSENCE. This version is a fully functioning version of OpenESSENCE that contains dummy data for demonstration purposes. This guide assumes that you are installing on a Windows 7 computer. Installation is very similar for other recent versions of Windows.

Some OpenESSENCE configuration files require changes to indicate installation-specific details such as database user name and password. These changes require the installer to have write access to the directories containing the configuration files. If the system is running the Windows 7 operating system and you have limited administrative access, you will need to copy configuration files to a location that allows edits, such as the Windows Desktop. Once edited, the original files can be overwritten by using copy and replace. If issues during the installation process still exist, please contact the local administrator.

In several places throughout this guide, you will be asked to download either a 32-bit version of a particular application, or a 64-bit version. In general, if you are using Windows XP, you should select the 32-bit version of the application. If you are using Windows 7, you should select the 64-bit version of the application.

Even though we have tried to be as thorough as possible in these instructions, this guide assumes that you have a moderate amount of experience in downloading and installing web applications, starting and stopping services, using the Windows command prompt, and navigating through the file system.

Installing and Configuring Java

OpenEssence requires Oracle's Java Development Kit (JDK) for execution. You must install Java and configure the JAVA_HOME and Path environment variables as described here.

1. In your browser, go to http://www.oracle.com/technetwork/java/javase/downloads/index.html.

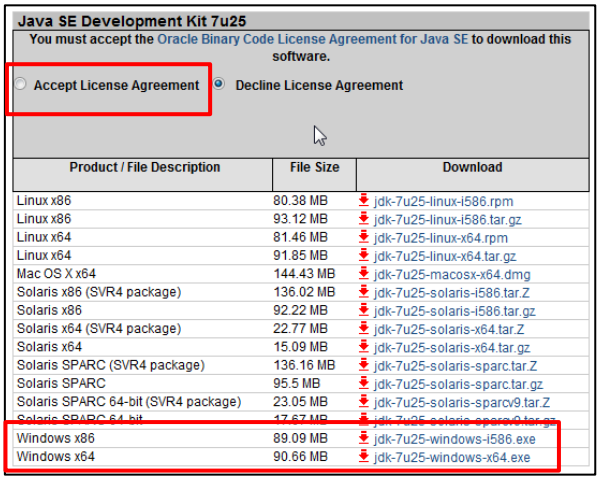
   Click **DOWNLOAD** under JDK.

   Do not download **Server JRE** or **JRE**; those are not required.

2. Check the **Accept License Agreement** box on the download page and select the Java distribution you would like to use.

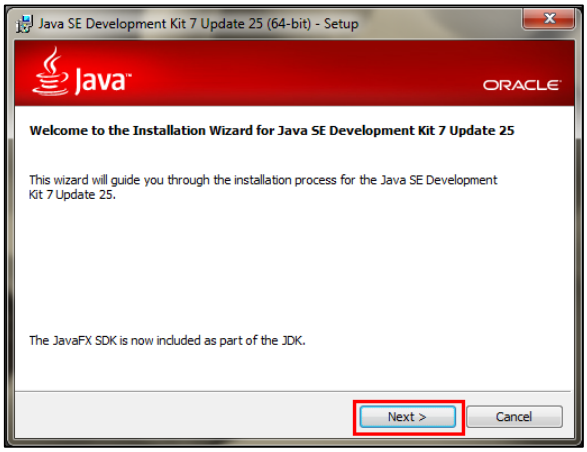
   If you are running 32-bit Windows (such as Windows XP), you must choose 32-bit Java for Windows (Windows x86).

   If you are running 64-bit Windows (such as Windows 7), you may choose either 32-bit or 64-bit Java; we recommend 64-bit (Windows x64).



3. Run the downloaded Java installer.

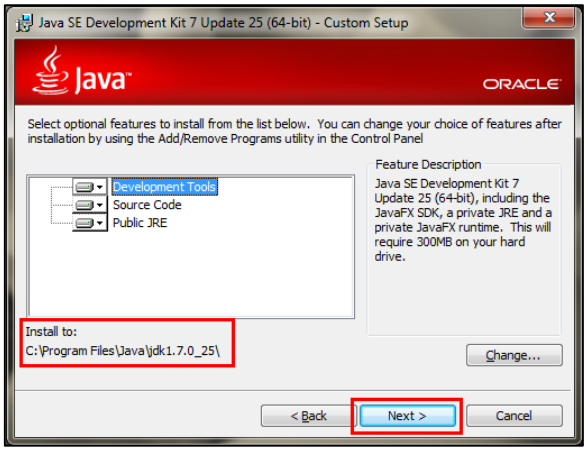
   Press **Next** to continue the Java Development Kit (JDK) installation.



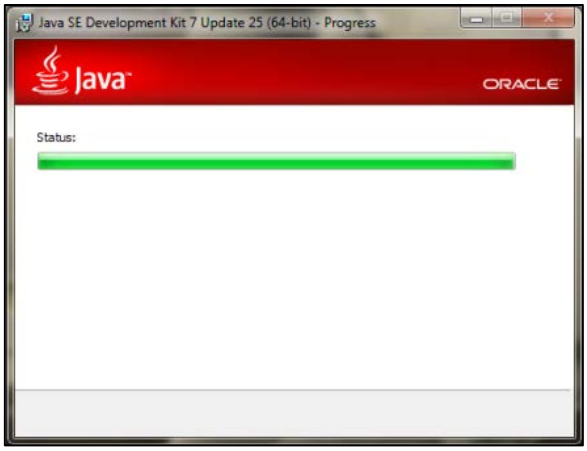
4. You can install to any directory.

   Note the location of this directory as you will need it later.

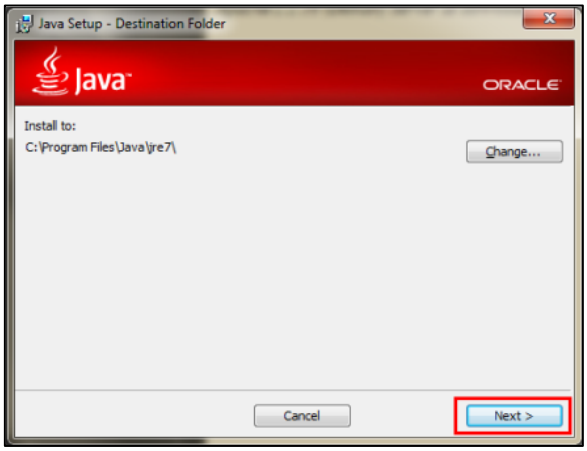
   Click **Next**.



5. A status indicator bar will show the progress of the installation.



6. After the JDK has installed, the Java Runtime Environment (JRE) will be installed. Press **Next**.

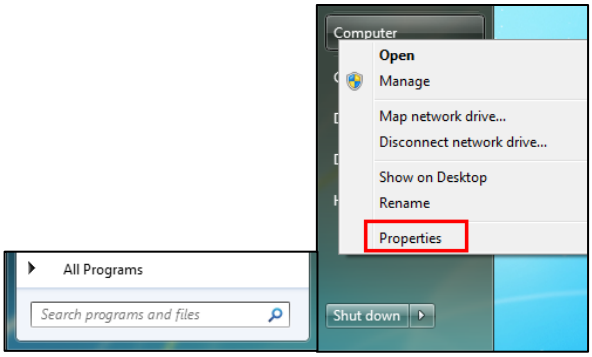


7. At the end of the Java installation you should see this screen. You do not need to click **Next Steps**. Click **Close**.

8. Now you will need to configure environment variables for Java.

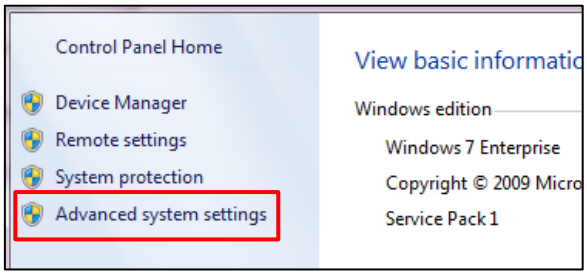
   Click the **Windows Start Menu**.

   Right-click on **Computer** and choose **Properties**.

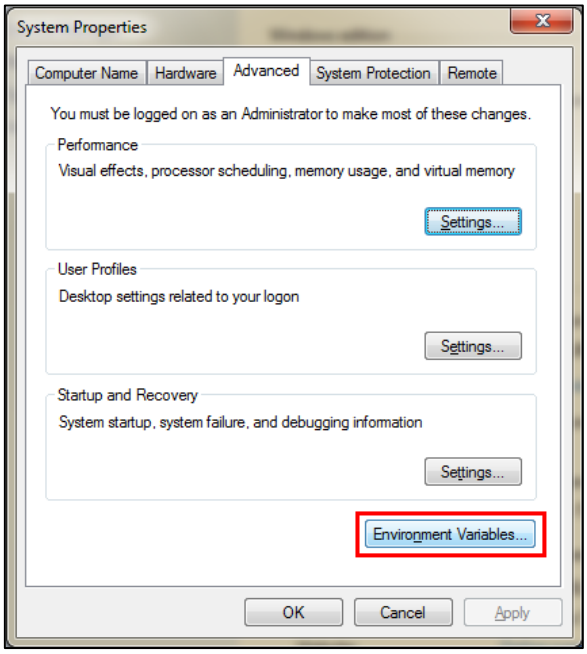


9. Click **Advanced System Settings**.

   Depending on your system settings, you may need to enter your Windows user ID and password to access the Advanced System Settings application.



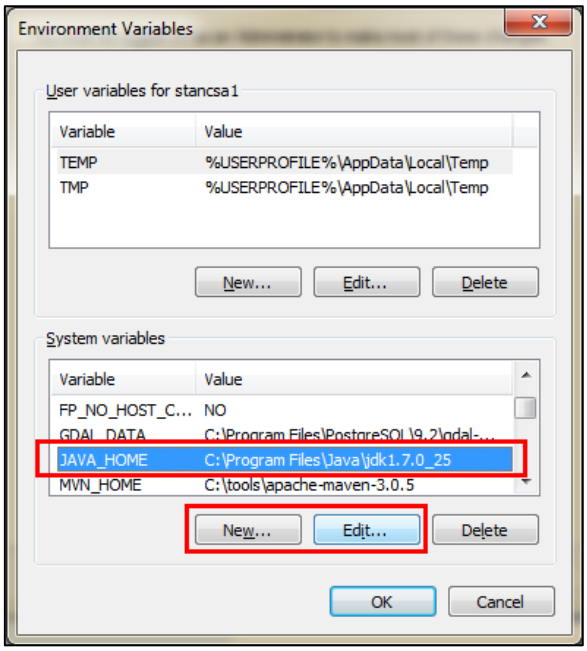
10. Click **Environment Variables**.



11. If a JAVA_HOME variable is listed under **User Variables**, select it and click **Delete**. (The user variables are listed in the upper half of this screen.)

    If a JAVA_HOME variable is listed under **System Variables**, select it and click **Edit.** (The system variables are listed in the lower half of this screen.)

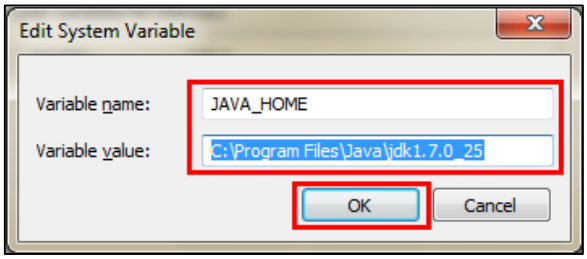
    If no JAVA_HOME variable is listed under **System Variables** click **New**.



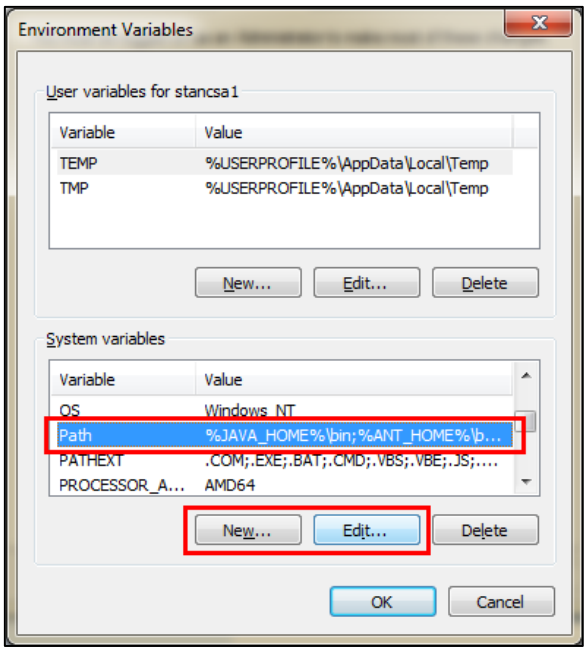
12. Enter the name of the directory in which you installed Java (from Step 4) for **Variable_value**. The variable name should be JAVA_HOME.

    Make sure that you specify the *base* directory for the Java installation and not the bin directory that's inside it.

    Click **OK** to save the value.



13. Select the **Path** variable under **System Variables** and click **Edit**. (It is highly unlikely that the **Path** variable does not already exist, but if it does not, press **New**.)

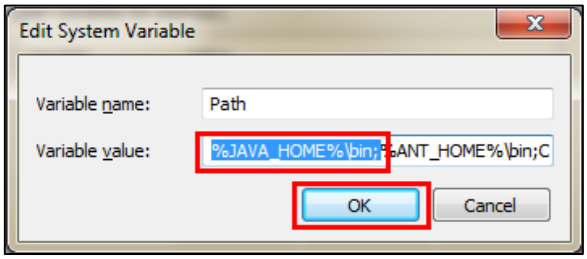


14. Add the following text in front of the existing value in the **Variable_value** field (press the HOME key to make sure you are at the beginning of the field):

    ```
    %JAVA_HOME%\bin;
    ```

    Click **OK** to save the value.

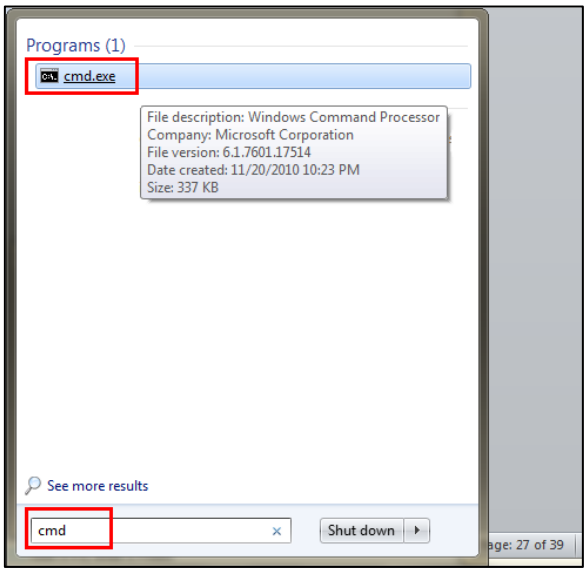
    Close all other dialog boxes by clicking **OK**.



15. To verify that the path was set correctly, open a CMD window:

    a) Click the Windows **Start** button
    b) Type `cmd` in the text field and press ENTER

    You should see a black command screen window (as shown in the next step).



16. At the prompt, type

    `where java`

    and press ENTER.

    You should see the following path:

    `C:\Program Files\Java\jdk1.7.0_25\bin\java.exe`

Installing PostgreSQL

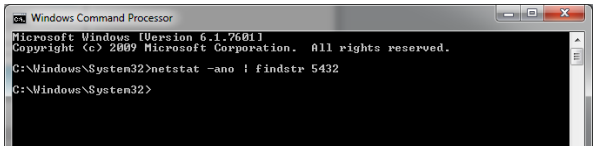
These installation instructions are based on PostgreSQL 9.2 and assume that the system does not currently have another server running on port 5432 (the default PostgreSQL port) on the target machine.

1. To check if port 5432 is available, open a command prompt (from the Windows Start menu, type `cmd` in the search box and press ENTER).

   At the command prompt, type

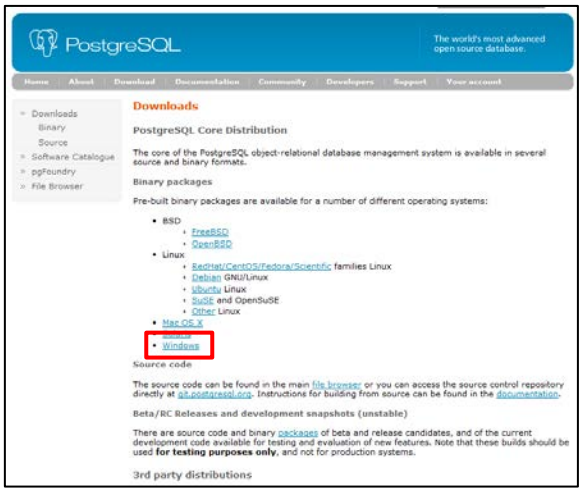
   `netstat –ano | findstr 5432`

   and press ENTER. There should be no process associated with the port.

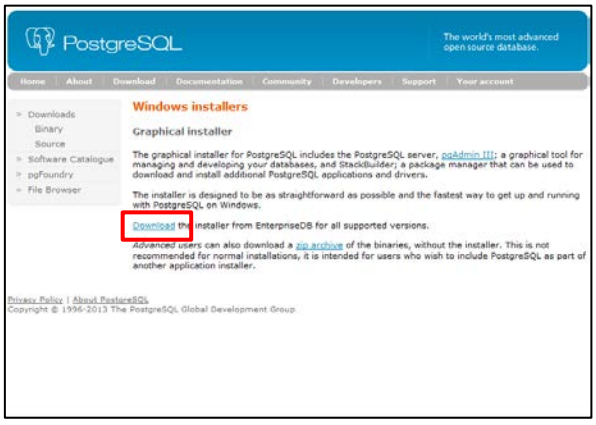


2. Open your browser and go to http://www.postgresql.org/download .

   Click **Windows** under the pre-built binary packages section.



3. Click the **Download** link.



4. Select either the 32-bit or 64-bit installer for Windows.

   If you are running 32-bit Windows, you must choose 32-bit PostgreSQL for Windows (Win x86-32)

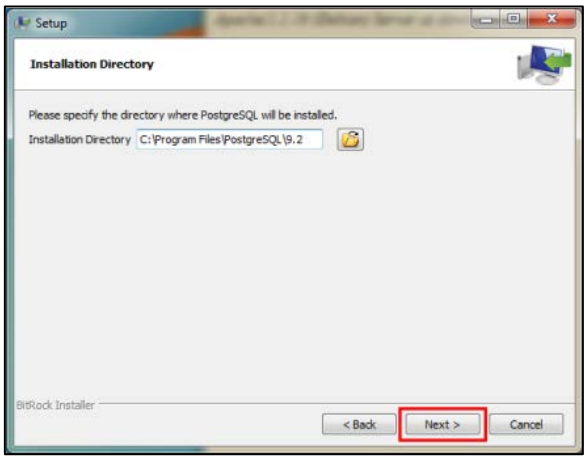
   If you are running 64-bit Windows, you may choose either 32-bit or 64-bit PostgreSQL; we recommend 64-bit (Win x86-64)

5. Run the downloaded installer.

   Click **Next** to continue.

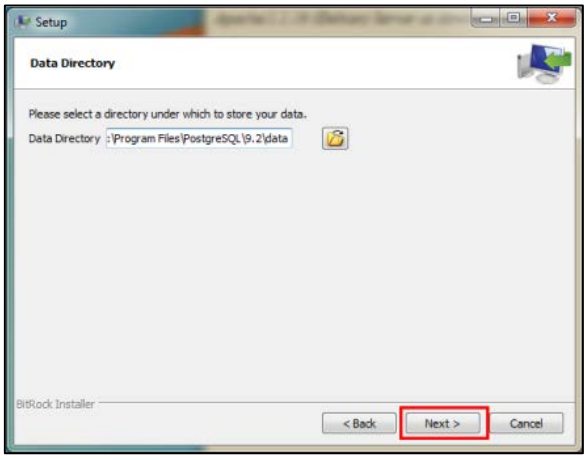
6. Select the installation directory for PostgreSQL. The default directory is recommended.

   Note the location of this directory; you will need it when installing PostGIS.
   Press **Next** to continue.



7. Select the directory where your data will be stored. The default directory is recommended.

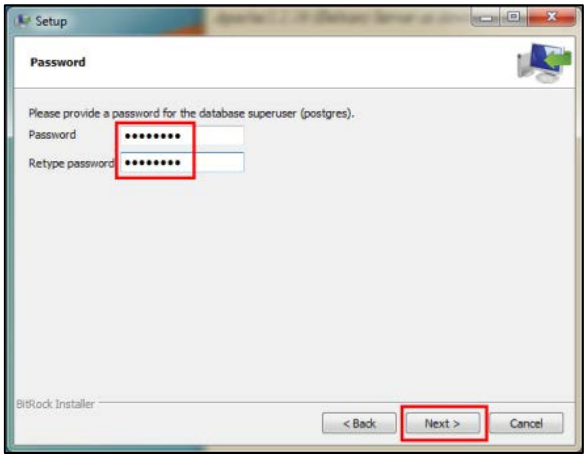
   Press **Next** to continue.



8. Enter and retype a password for your database administrator (the administrator user ID is *postgres*).

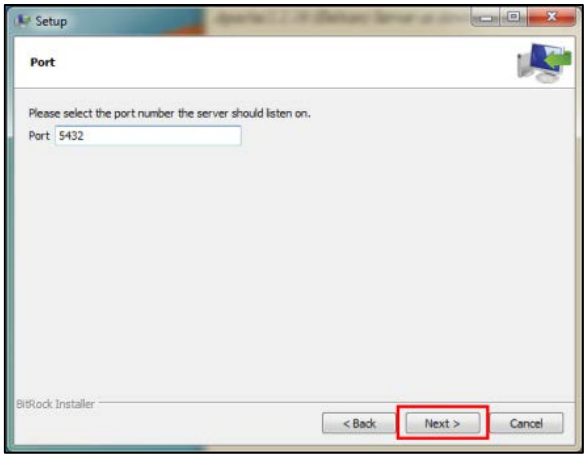
   Note the password. This password will be used to access the database by OpenESSENCE. PostgreSQL will warn if the password does not match your system requirements.

   Press **Next** to continue.



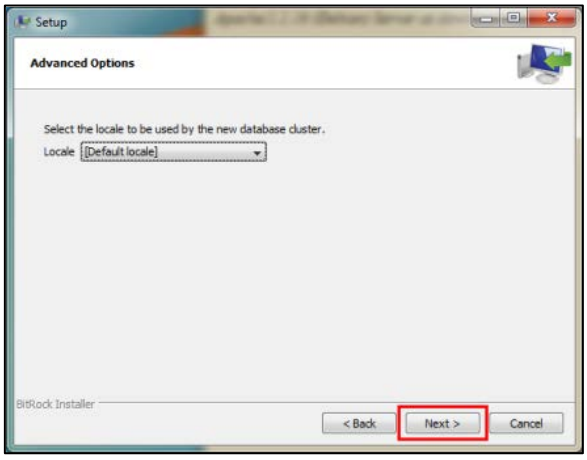
9. Enter the port on which the PostgreSQL server will listen for incoming requests. The default port, 5432, is recommended unless there is a conflict on your machine.

   Press **Next** to continue.

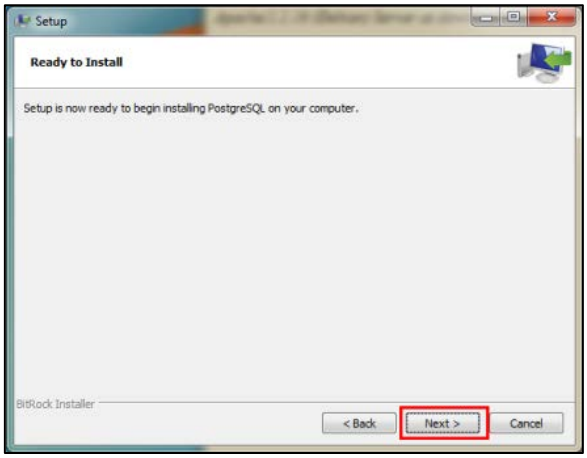


10. Choose the locale for your database. The default (**Default locale**) is recommended.

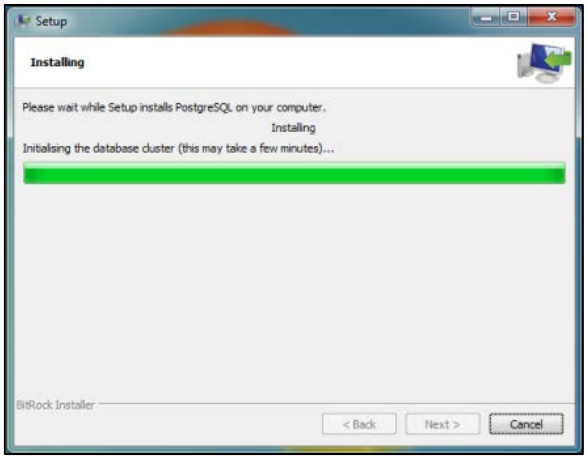
    Press **Next** to continue.



11. Press **Next** to start the installation.

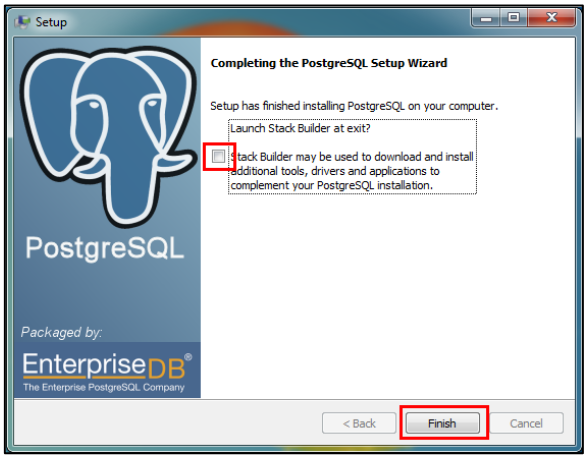


12. A status indicator bar will show the progress of the installation.



13. Uncheck the **Launch Stack Builder at exit?** option.

    Click **Finish** to complete the PostgreSQL installation.



Installing PostGIS

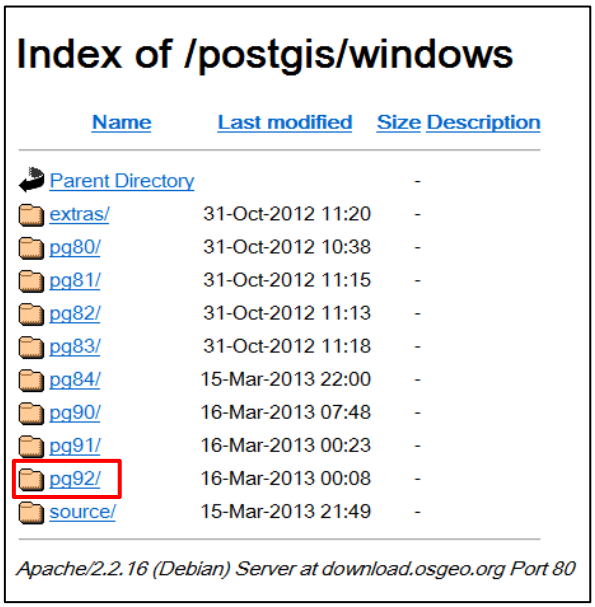
You will now install the PostgreSQL GIS extensions. PostGIS is an open source software program that adds support for geographic objects to PostgreSQL.

1. Open your browser and go to http://postgis.net/install.

   Click the **Windows Downloads** link.

2. Click the **PostGIS Windows Downloads** link.

3. Choose the latest version of PostGIS (in this example, the latest version is pg92).

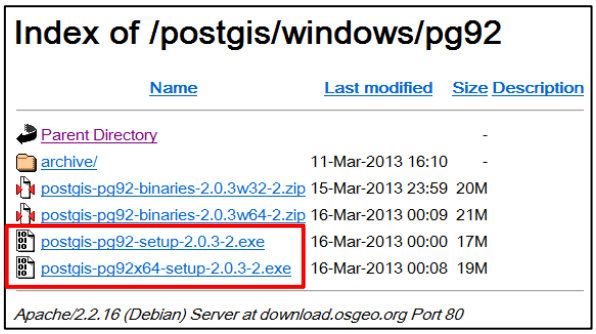


4. Download the 32-bit or 64-bit version of PostGIS.

   If you are running 32-bit Windows (such as Windows XP), you must choose 32-bit PostGIS for Windows (`postgis-pg##-setup-####.exe`).

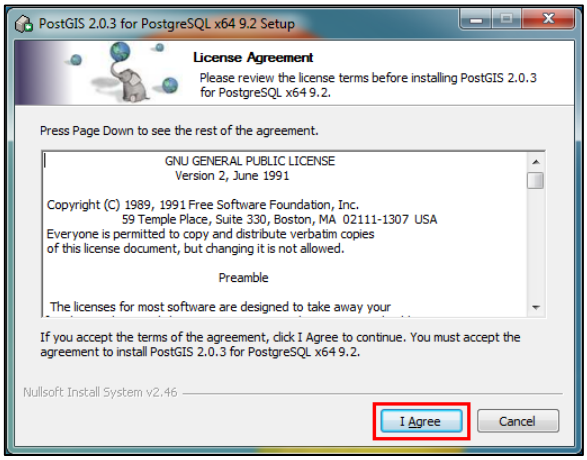
   If you are running 64-bit Windows (such as Windows 7), you may choose either 32-bit or 64-bit PostGIS; 64-bit is recommended (`postgis-pg##x64-setup-####.exe`).

   NOTE: You must use the same version (32 bit or 64 bit) for both PostgreSQL and PostGIS.



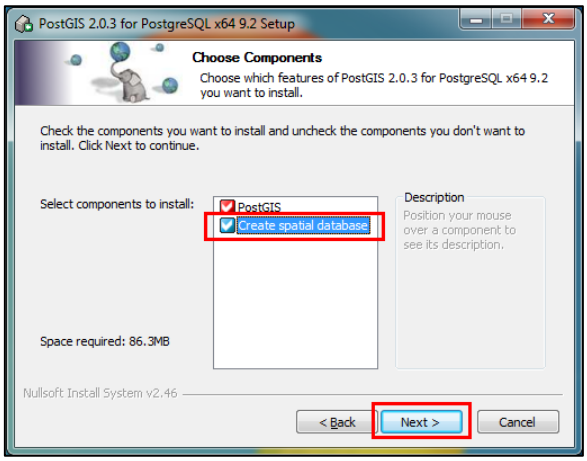
5. Run the installer.

   Click **I Agree** to accept the terms of the license agreement.



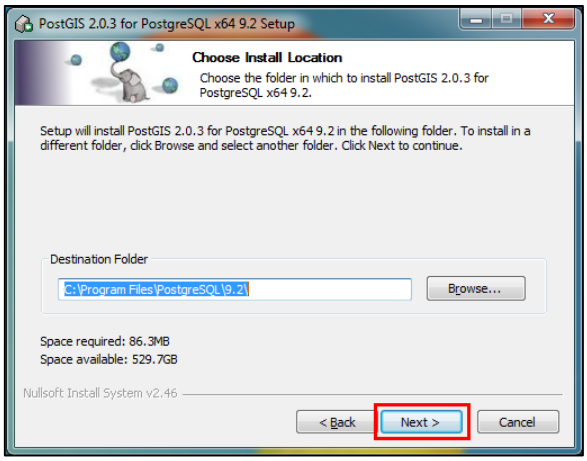
6. Check the **Create spatial database** box to create a new database.

   Click **Next** to continue.



7. For the install location, choose the same folder in which you installed PostgreSQL. (That folder may already appear in the **Destination Folder** field.)

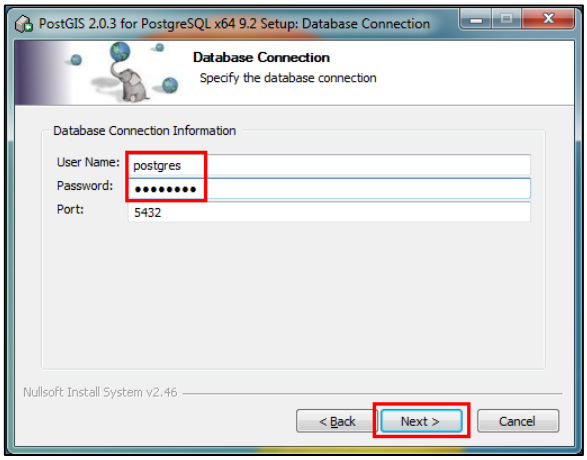
   Click **Next** to continue.



8. Enter the user name (`postgres`).

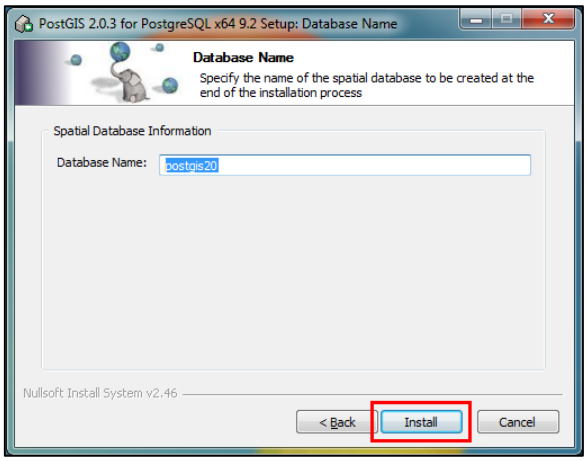
   Enter the password you selected when installing PostgreSQL.

   Click **Next** to continue.

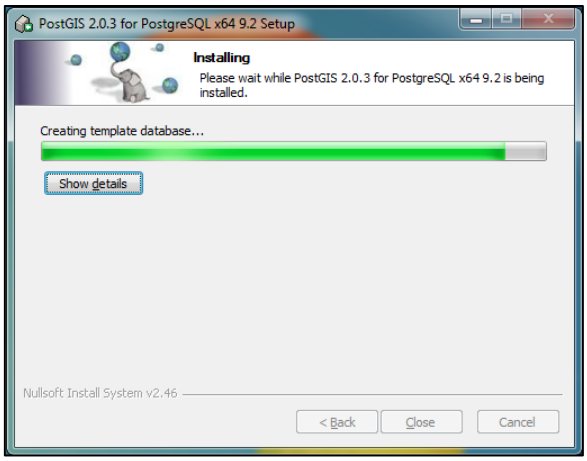


9. In the **Database Name** field, use the default name provided, *postgis20*.

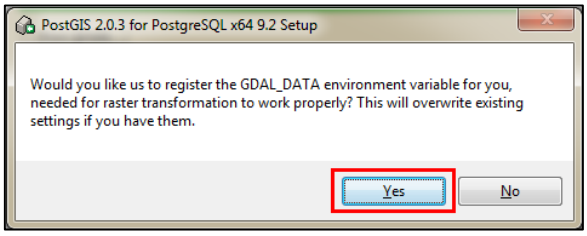
   Click **Install** to start the installation.



10. A status indicator bar will show the progress of the installation.

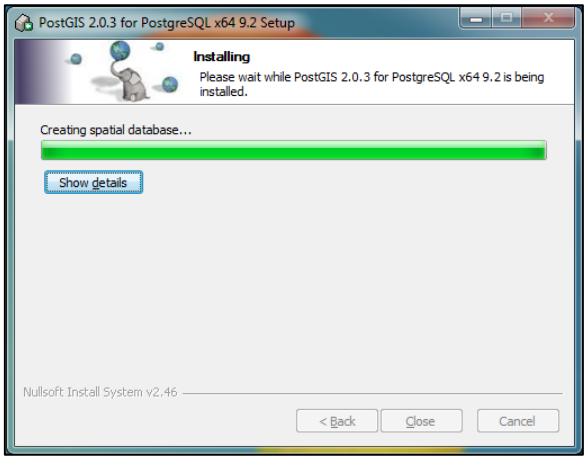


11. Click **Yes** to set the GDAL_DATA variable.



12. A status indicator bar will show the progress of the installation.

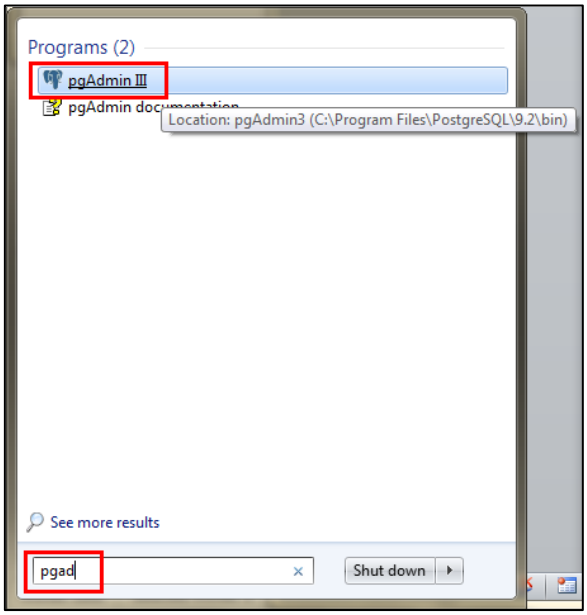
    Close the window when installation is complete.



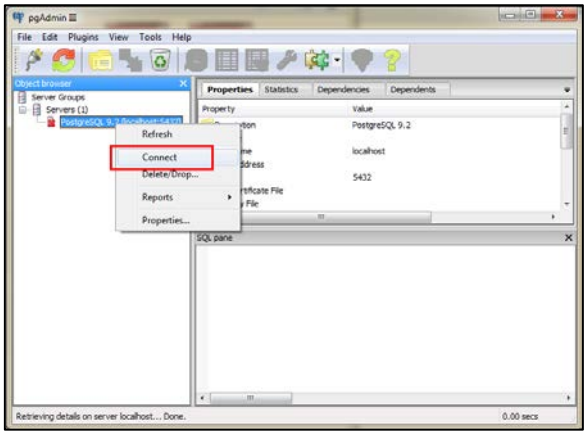
Creating a New Database

We will now create a new initial database that contains the basic schema. We will overwrite this initial database with a backup copy of the OpenESSENCE demo version (in the next section). To create a new database:

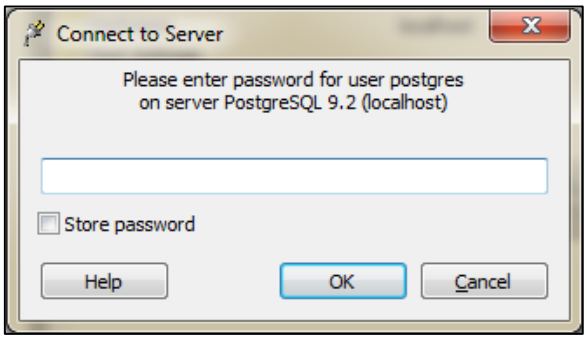
1. Launch the PostgreSQL administrative tool by doing the following:
   a) Click the Windows **Start** button
   b) Start typing `pgadmin` in the text box
   c) When **pgAdmin III** appears in the **Programs** list, select it



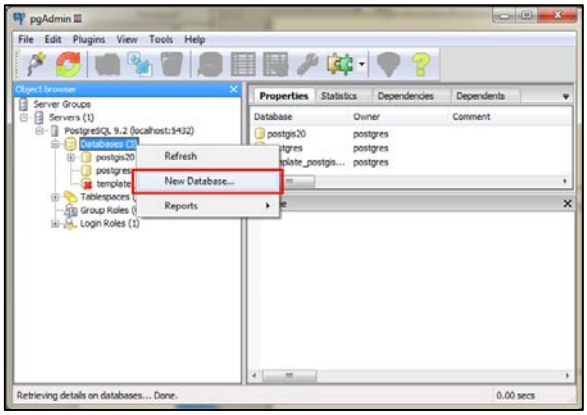
2. Under **Servers**, right-click **PostgreSQL 9.2 (localhost:5432)** and choose **Connect**.



3. Enter your database password (the one associated with user ID *postgres*).

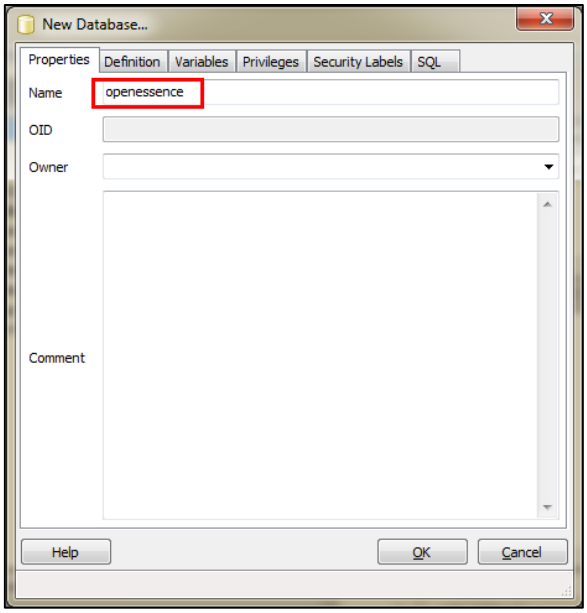


4. Right-click **Databases** and select **New Database…**



5. Enter a name for the database. In this instance, the database name should be *openessence*.

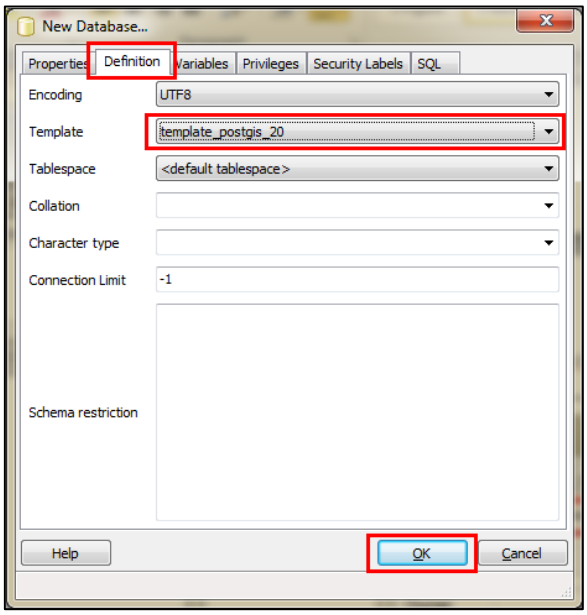
   Note the name of the database as you will need it when configuring Tomcat and GeoServer later.



6. Switch to the **Definition** tab.

   In the **Template** field, select **template_postgis_20** as your database template.

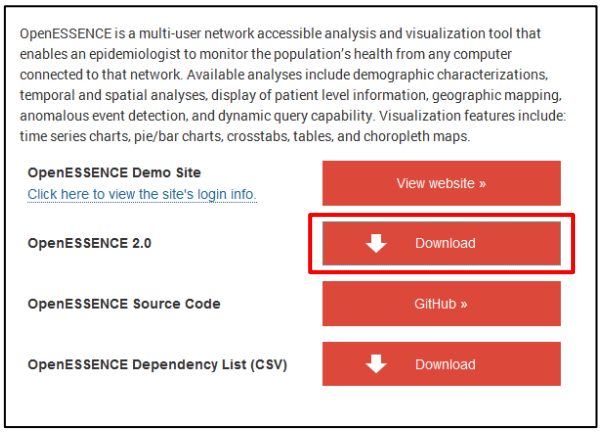
   Click **OK** to create the database.



7. Download the OpenESSENCE SQL script file from the SAGES website. In your browser, go to http://www.jhuapl.edu/sages/tools.htm.

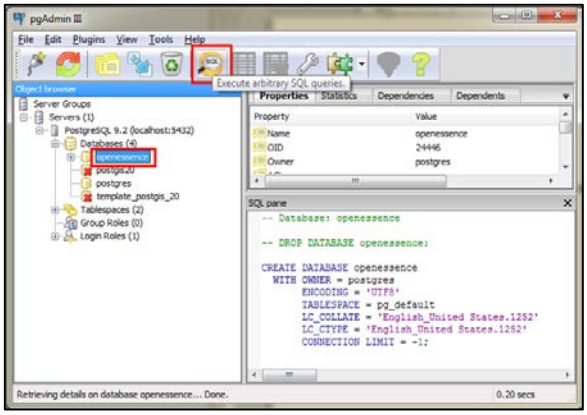
   Click **Download** next to OpenESSENCE 2.0. When prompted, choose to save the ZIP to a location on your computer (such as the Desktop). Once it is downloaded, right click on the ZIP file and select **Extract All** to extract the compressed files.

   The ZIP file contains 6 files. For the current step, you need to be concerned only with `openessence.sql`. The other files will be used in subsequent sections of this guide.

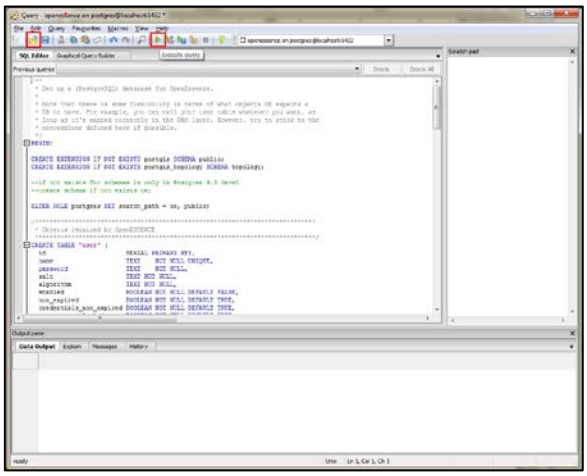


8. Click on the new database to select it.

   Click the **SQL** button on the toolbar to open the SQL query window.

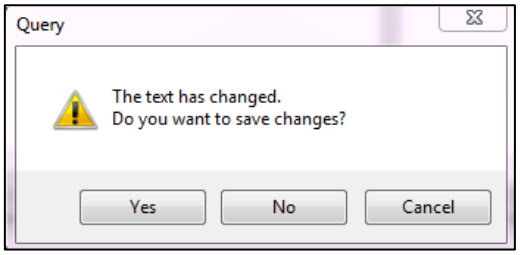


9. Open the `openessence.sql` file containing the database setup script. Click the **Open file** icon on the toolbar, or click **File>Open** from the menu bar.



10. Before the SQL file executes, you may receive a question asking if you want to save changes. Click **No**.

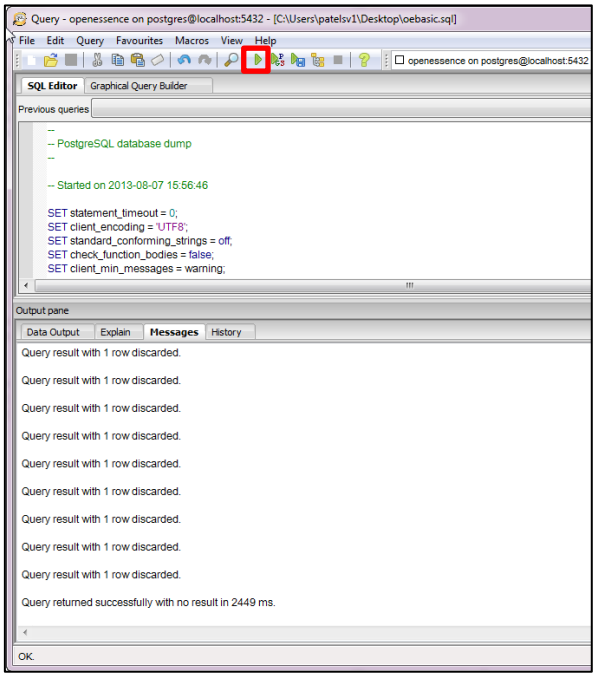
    This message occurs because there may be some text in the SQL editor screen when it is first opened. When we open the SQL file, that text will be overwritten.



11. Press the **Execute query** button on the toolbar.

    The queries should run quickly. You will see results similar to those shown on the right.

    After running the queries, you can close the **pgAdmin** windows.



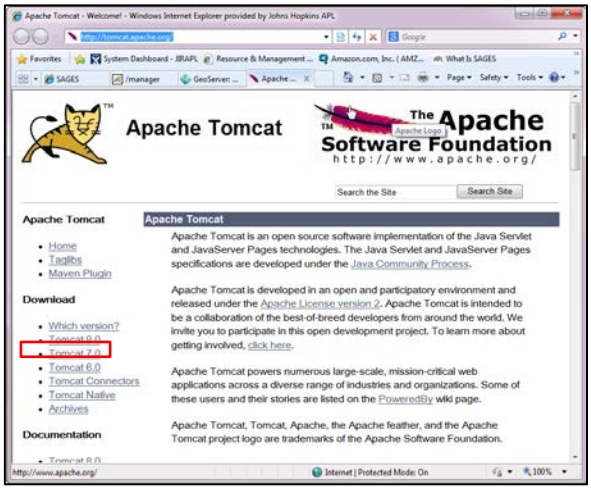
Installing and Configuring Apache Tomcat

These installation instructions assume that you do not currently have any other server running on port 8080 (the default Tomcat port) on the target machine. If you do have something running on port 8080 (you can check by using this command at the CMD prompt: `netstat –ano | findstr 8080`) and cannot install on another machine, change the ports as referenced in the Tomcat manual (found on the Apache Tomcat website: http://tomcat.apache.org).

1. Open your browser and go to http://tomcat.apache.org/

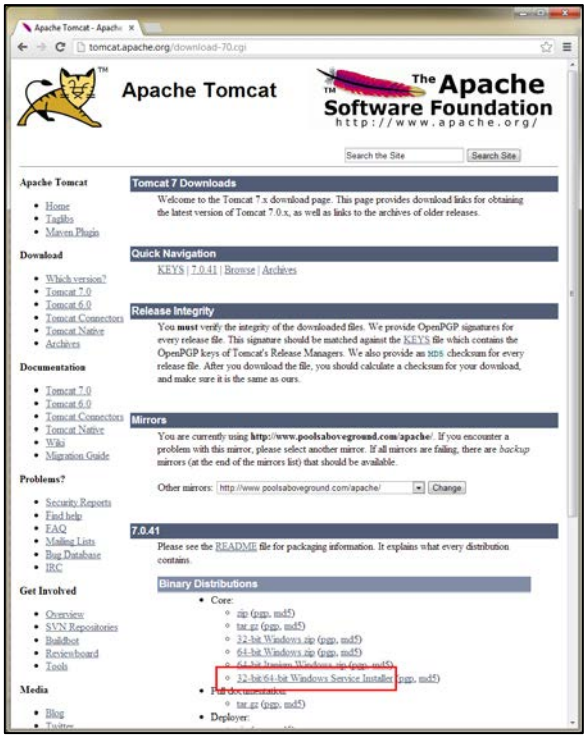
   Select Tomcat 7.0 under the **Download** section.

   NOTE: OpenESSENCE has not been tested on Tomcat versions later than 7.0.



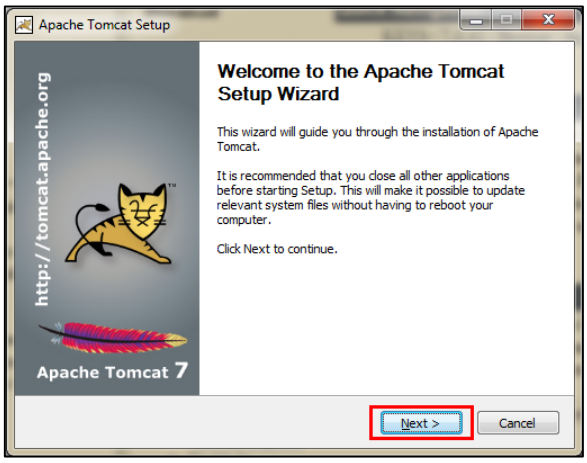
2. Click the **32-bit/64-bit Windows Service Installer** link.

   We will refer to the directory in which Tomcat is installed as `<tomcat home>`.

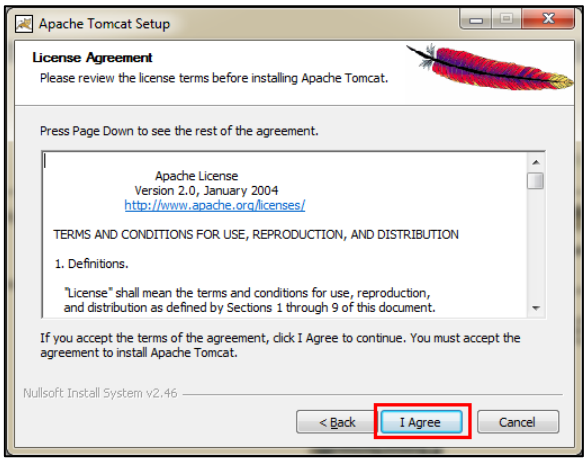


3. Run the installer.

   Click **Next** to continue.



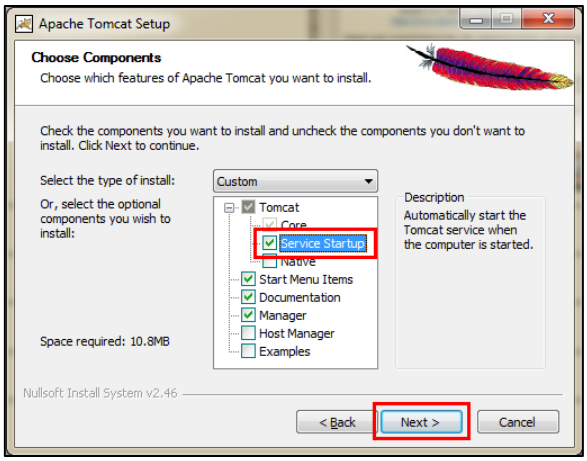
4. Click **I Agree** to accept the terms of the license agreement.



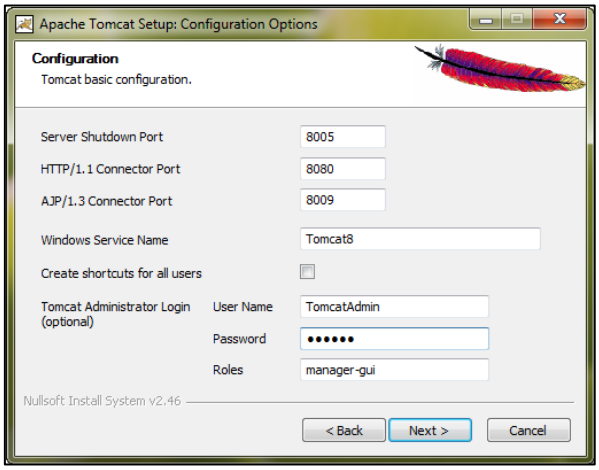
5. If you want Tomcat to start automatically when Windows starts, expand the **Tomcat** section and check the **Service Startup** box.

   If you want to change when the Tomcat service runs (automatically at startup or when you manually start it), you can change this option once it has been installed. See the **Configuring Tomcat for Optimal OpenESSENCE Performance** section below.

   Click **Next** to continue.



6. If there is another service running on port 8005, 8009 or 8080, you can change the values here. (This is not usually the case. However, some tools, like Oracle XE, listen to port 8080, which would require you to change the Tomcat port.) Check the ports at a command prompt:

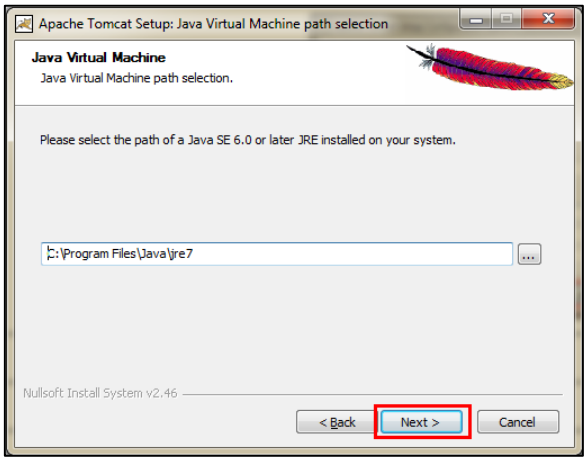



```
netstat –ano | findstr 8005
netstat –ano | findstr 8009
netstat –ano | findstr 8080
```

NOTE: Even though an administrator password is optional, we recommend creating a username and password for the Tomcat Administrator Login. You will need the Tomcat admin password later in this guide.

Click **Next** to continue.

7. Choose the location of your Java installation. Make sure to select the `jre` folder.



Click **Next** to continue.

8. Choose the location in which you want to install Tomcat.

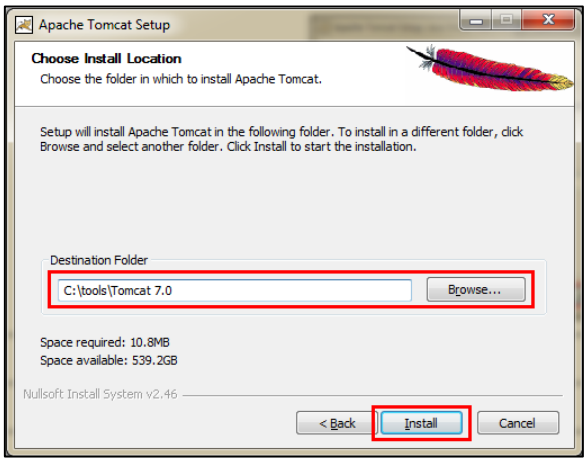
   *It is **strongly** recommended that you change this to a directory for which you have access to edit/add/remove contents on your machine.*

   For example, `c:\tools\Tomcat 7.0` works well.

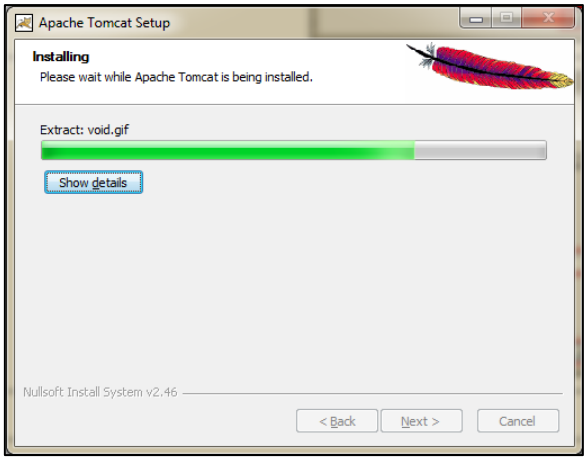
   We will refer to this directory as:

   `<tomcat home>`

   Click **Install** to start the installation.

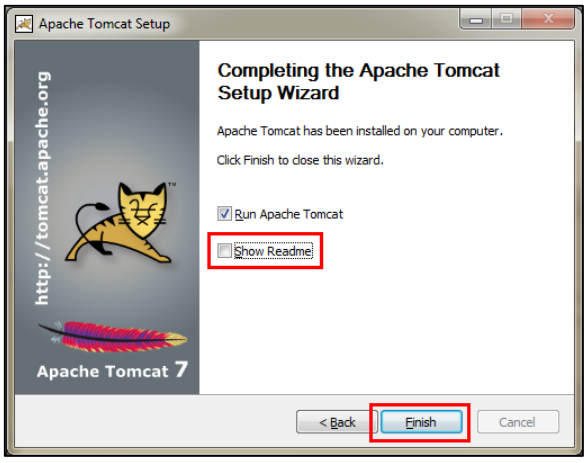


9. A status indicator bar will show the progress of the installation.



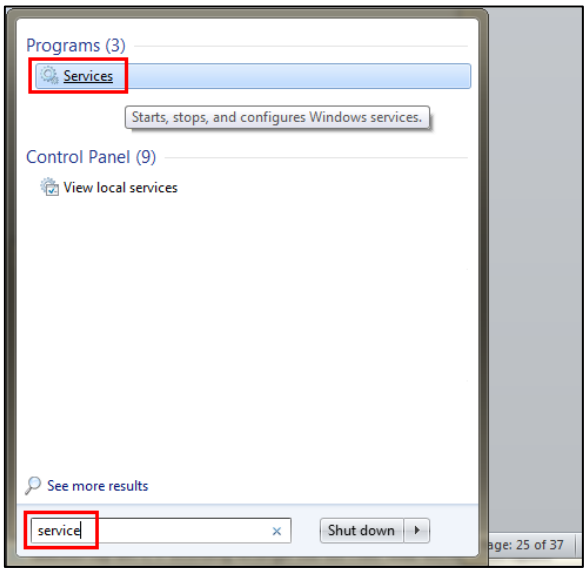
10. Uncheck **Show Readme** and click **Finish**. Tomcat will start.

    You may see a dialog indicating that the Tomcat service is attempting to start.



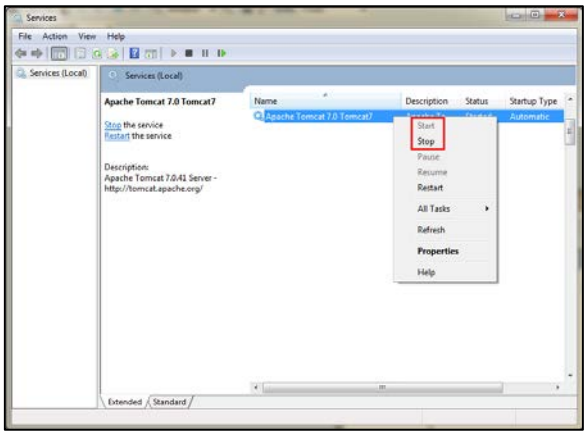
11. To check the status of Tomcat, open the **Services** control panel:

    a) Click the Windows **Start** button
    b) Start typing `services`
    c) When **Services** appears in the **Programs** list, select it



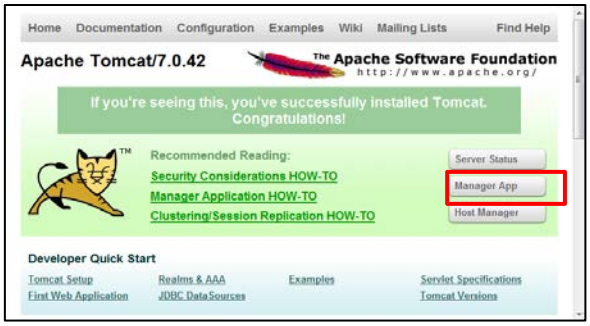
12. You can start or stop Tomcat by right-clicking the Apache Tomcat service and then selecting either **Start** or **Stop**. You can also **Restart** the service.

    NOTE: You will see more services than just the Tomcat service in your actual services list.



13. To test Tomcat, open a browser and type http://localhost:8080 and press ENTER. You should see the Apache Tomcat Manager Screen.

    Click the **Manager App** link to test your Tomcat password. Login with your Tomcat admin password when prompted.

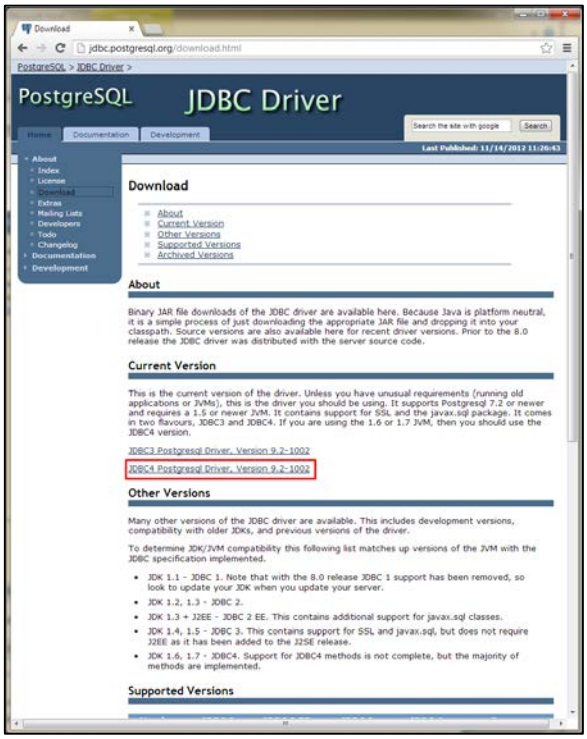


Installing the PostgreSQL JDBC Driver for Tomcat

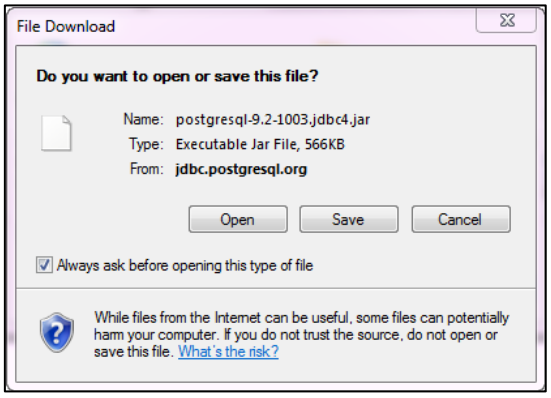
The JDBC driver enables Tomcat to communicate with the PostgreSQL database.

1. Open your browser and go to http://jdbc.postgresql.org/download.html

   Click the **JDBC 4 PostgreSQL Driver** link for the version of PostgreSQL you installed.



2. Save the JAR file to `<tomcat home>\lib`.

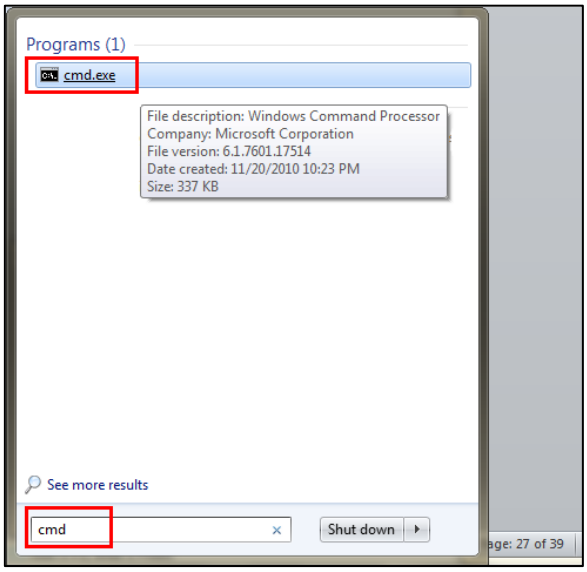


Configuring Tomcat for Secure Socket Layer (SSL) Communication

You will now create a certificate and configure Tomcat for SSL communication.

1. Next, you will generate a certificate for SSL (secure) communication with the server. Open a Windows command prompt:

   c) Click the Windows **Start** button
   d) Type `cmd` in the text field and press Enter



2. Change to your `<tomcat home>` directory by typing:

   ```
   cd /d <tomcat home>
   ```

   (replace `<tomcat home>` with the name of your tomcat directory)

   For example:

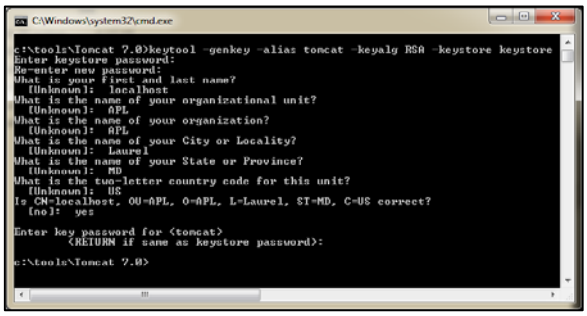
   ```
   cd /d "c:\tools\Tomcat 7.0"
   ```

   NOTE: If your `<tomcat home>` directory name contains spaces, you need to surround it in quotes in the above command.

3. Run the following command (all on one line) to generate a keystore.

   ```
   keytool -genkey -alias tomcat -keyalg
   RSA -keystore keystore
   ```

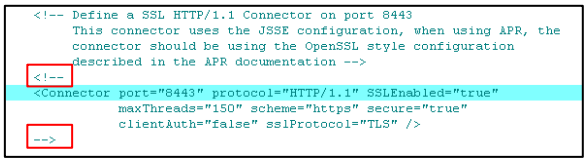
   Enter the following information:
   - Keystore password (re-enter when prompted)
   - First/Last Name
     - use **localhost** for local testing
     - use your domain name for production (e.g. www.jhuapl.edu)
   - Org unit, org, city/locality, state/province, country code – enter appropriate values for your organization
   - Type `yes` to confirm the entries
   - When prompted to enter a password for <tomcat>, press RETURN (this will use the keystore password)



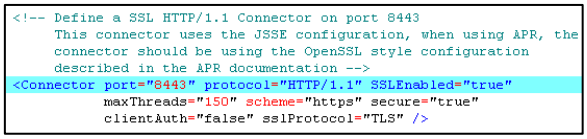
4. Edit `<tomcat home>\conf\server.xml` using an editor such as Wordpad.

   Find the block of text that starts with:

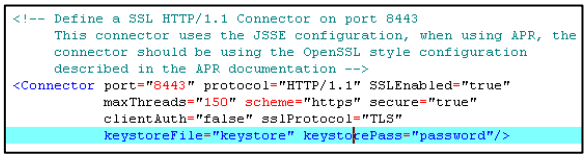
   ```
   <Connector port="8443"
   ```



5. Remove the XML comments tags (`<!--` and `-->`) that are around it.

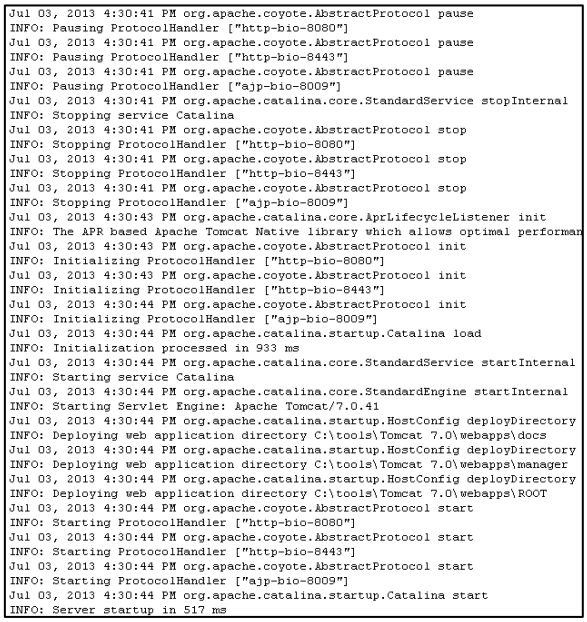


6. Add `keystoreFile` and `keystorePass` to the end of the `Connector` tag so it contains the following. Use the password you used when creating the keystore.




```
  <Connector port="8443"
    protocol="HTTP/1.1"
SSLEnabled="true"
    maxThreads="150" scheme="https"
    secure="true" clientAuth="false"
    sslProtocol="TLS"
    keystoreFile="keystore"
    keystorePass="<your keystore
password>"/>
```

7. Test by (re)starting Tomcat via the **Services** control panel (as described above when installing Tomcat).



   Check the Tomcat log output in the following file corresponding to today's date:

   `<tomcat home>\logs\catalina.yyyy-mm-dd.log`

   You should see INFO messages, ending with

   ```
   INFO: Server startup in ### ms
   ```

   If you see the following error messages, you should verify the XML edits in the previous step.

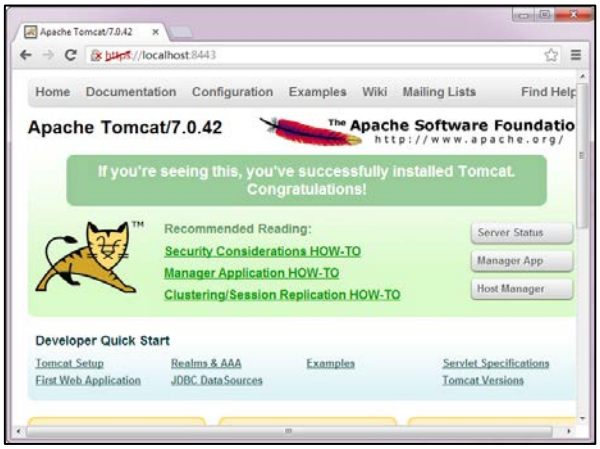
   ```
   SEVERE: Error starting endpoint
   java.io.FileNotFoundException:
   <tomcat home>\bad-keystore-name
   (The system cannot find the file
   specified)
   ```

   or

   ```
   SEVERE: Error starting endpoint
   java.io.IOException: Keystore was
   tampered with, or password was
   incorrect
   ```

8. To test Tomcat with SSL communication, open a browser and type https://localhost:8443 and press ENTER.

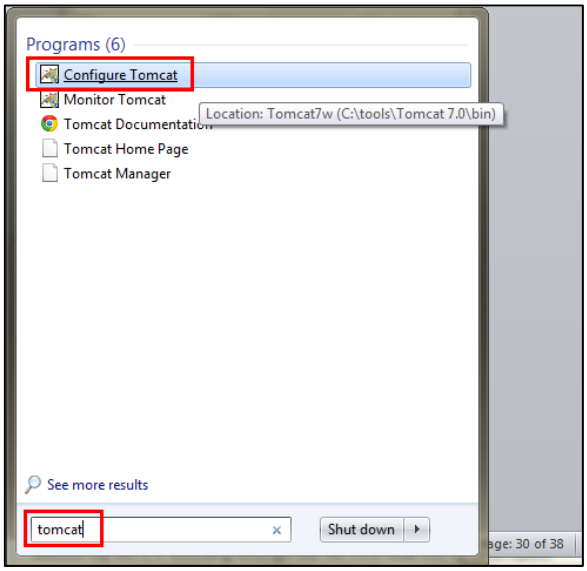
   You may see a security warning. Press **Continue** or **Proceed Anyway** (depending on the browser you are using). You should see the Apache Tomcat Manager Screen.



Configuring Tomcat for Optimal OpenEssence Performance

When running Tomcat with OpenEssence and GeoServer web applications, it is often necessary to adjust the default memory settings. The JVM (Java Virtual Machine) that Tomcat uses can also be configured to provide debugging information over a specified port.

1. Start the Tomcat Configuration Tool:
   a) Click the Windows **Start** button
   b) Type `tomcat` in the text field
   c) Click **Configure Tomcat** from the **Programs** list



2. Click the **Java** tab.

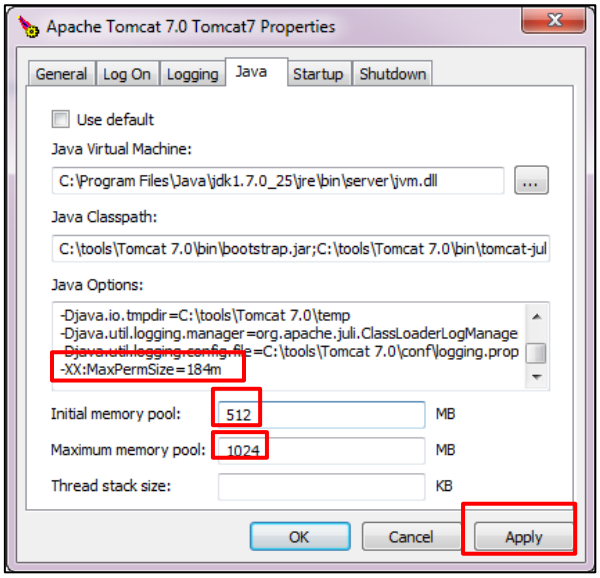
   Add `-XX:MaxPermSize=184m` to the list of **Java Options** (case sensitive).

   Set **Initial Memory Pool** to `512`.

   Set **Maximum Memory Pool** to `1024`.

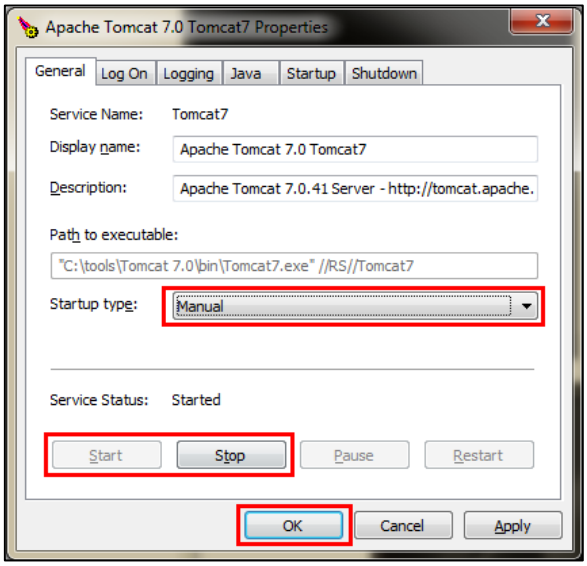
   The pool sizes can be adjusted higher if you are running a 64-bit Java installation and you have sufficient memory, but the sizes given here reasonable for running OpenESSENCE.

   Click **Apply** to apply the changes.



3. The default startup type is automatic, which means that the Tomcat service will start when the computer starts. You can change the startup type for the service from automatic to manual using the **Startup type** option on the **General** tab. If the startup type is manual, you must start the service (from this screen) in order for OpenESSENCE to function.

   On this screen, you can also start and stop the Tomcat service using the **Start** and **Stop** buttons. This may be a convenient alternative to starting and stopping the service via the **Services** control panel.



Downloading OpenESSENCE and GeoServer WAR Files

Now that Java, PostgreSQL, and Tomcat have been installed and configured, you will need to have the current versions of the OpenESSENCE and GeoServer Web Application Archive (WAR) files. These files will be deployed in the next section.

1. The OpenESSENCE WAR file was included in the ZIP file that you downloaded in a previous step (Step 7 in *Creating a New Database* section, page 20), so you should already have the WAR file on your computer. The file name is `openessence.war`. In this step, just ensure that you have this file.

2. Download the GeoServer WAR file from the GeoServer web site.

   In your browser, go to http://geoserver.org/display/GEOS/Download.

   Click **Stable** to download the official stable release of GeoServer, version 2.3.4.

3. Select the **Web Archive** download format. The download will start automatically. Ignore any forms that may be presented.

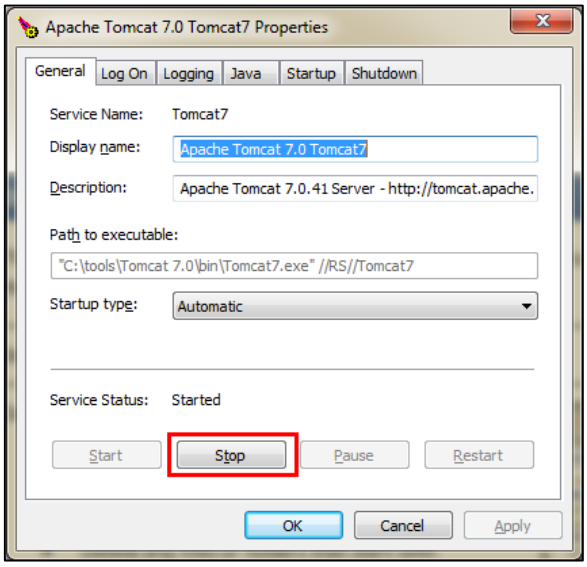
   The WAR file will be zipped (compressed). Double-click the zip file to access the WAR file.

Deploying OpenEssence and GeoServer to Tomcat

This section will describe how to deploy the OpenESSENCE WAR file and the GeoServer WAR file to Tomcat and set up the OpenESSENCE site configuration directory.

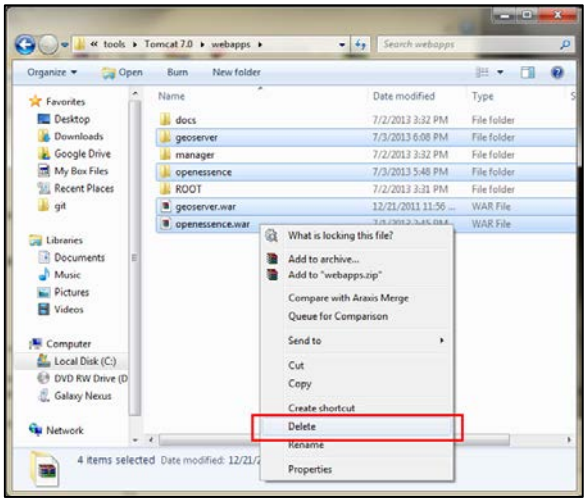
1. Stop Tomcat if it is currently running.

   You can do this through the **Services** control panel or through the Tomcat Configuration tool (described in the previous section).



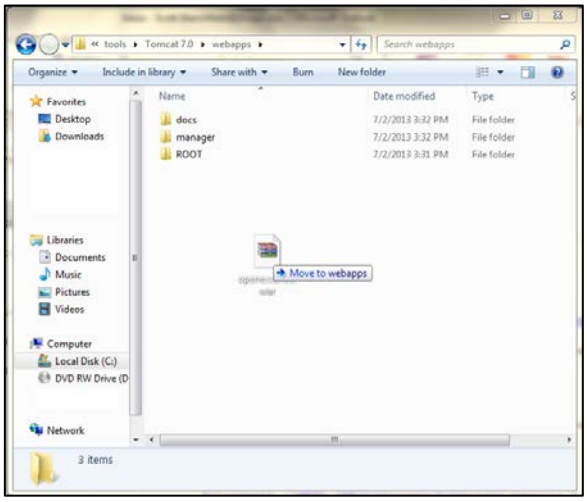
2. Delete previous OpenESSENCE and GeoServer deployments (if any):

   - Look in `<tomcat home>\webapps`
   - Delete any files or folders that start with `openessence` or `geoserver`
   - Look in `<tomcat home>\work\Catalina\localhost`
   - Delete any files or folders that start with `openessence` or `geoserver`



3. Copy or move the `openessence.war` and `geoserver.war` files (that you downloaded in the previous sections) into:

   `<tomcat home>\webapps`

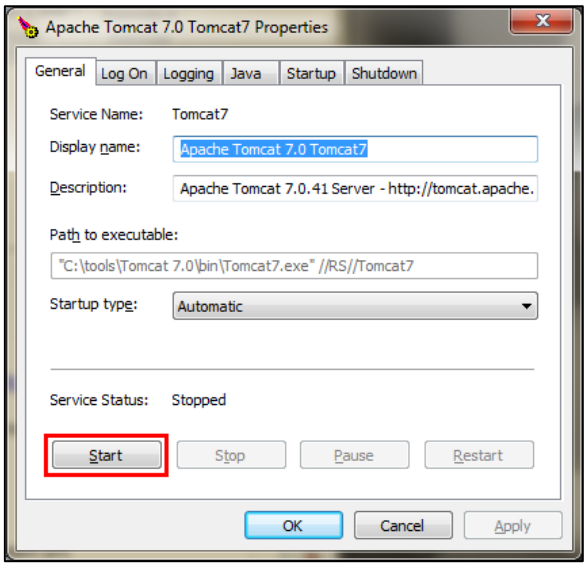


4. Restart Tomcat to deploy the war files.

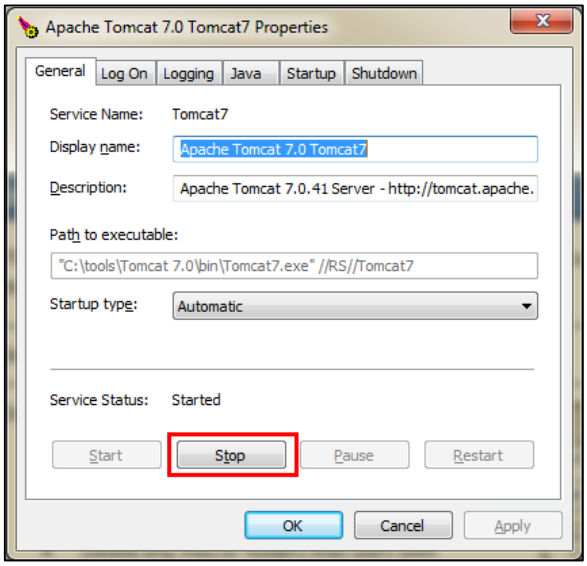
   When started, Tomcat will expand the `openessence.war` file into the following directory:

   `<tomcat home>\webapps\openessence`

   It will do the same for `geoserver.war`.

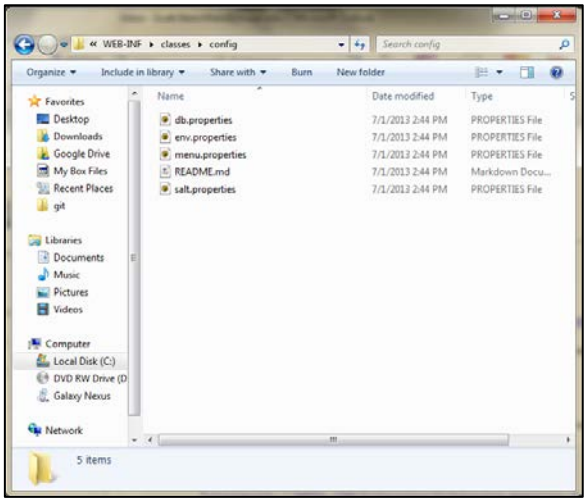


5. Stop Tomcat (so we can cleanly edit some configuration files).



6. Find the following directory:

   `<tomcat home>\webapps\openessence\WEB-INF\classes\config`



7. Edit the `db.properties` file using Wordpad.

   At the end of the `db.url` line, make sure the database name is `openessence`.

   Change the value for `db.password` to the password you used when installing PostgreSQL.

   NOTE: Lines starting with the # sign are comments and are ignored.

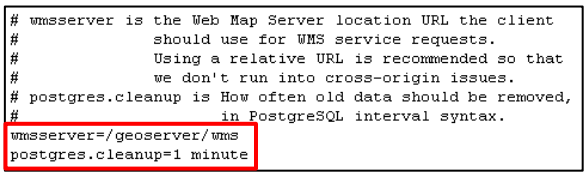
```
db.driverClass=org.postgresql.Driver
db.url=jdbc:postgresql://localhost:5432/openessence
db.username=postgres
db.password=password
```

8. (Optional)
   If you want to specify:
   - Web Map Server other than the default (/geoserver/wms). This is the URL that the client should use for WMS service requests. Using a relative URL is recommended so that you do not run into cross-origin issues.
   - Stale data cleanup other than the default (1 minute). This indicates how often old data should be removed, in PostgreSQL interval syntax. See http://www.postgresql.org/docs/current/static/datatype-datetime.html#DATATYPE-INTERVAL-INPUT for syntax details. The value for this property should not include the word "interval".

   Using a text editor such as Notepad, create a file called `map.properties` in the folder:

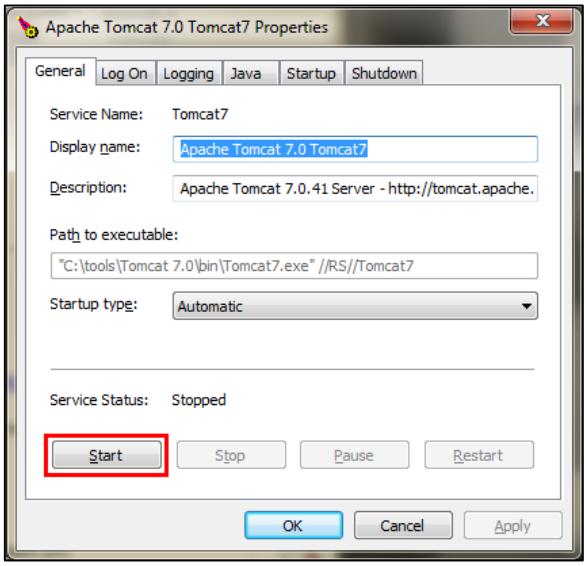
   ```
   <tomcat home>\webapps\openessence\WEB-INF\classes\config
   ```

   Add `wmsserver` and/or `postgres.cleanup` properties as shown (you do not need the comment lines that start with `#`).



9. Make sure the PostgreSQL service is started.

10. Restart Tomcat.



GeoServer Site Configuration

OpenEssence uses the GeoServer web application to providing mapping capabilities. Some configuration of GeoServer is necessary.

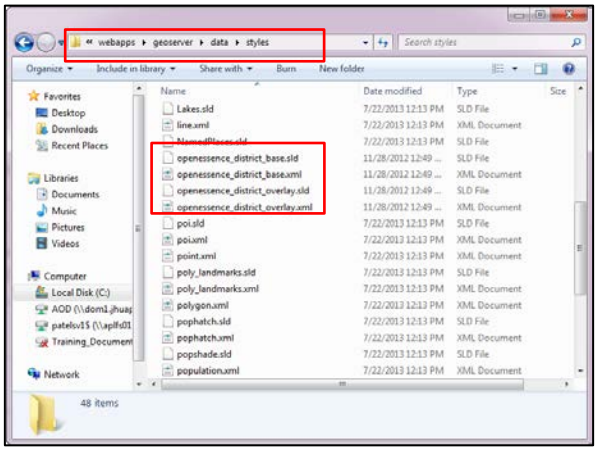
1. From the OpenESSENCE ZIP folder that you downloaded in a previous section (*Creating a New Database* section, step 7, page 20), copy the following four files:

   ```
   openessence_district_base.sld
   openessence_district_base.xml
   openessence_district_overlay.sld
   openessence_district_overlay.xml
   ```

   into the following directory:

   ```
   <tomcat home>\webapps\geoserver\data\styles
   ```

   These files are GeoServer styles that will be used with the demo version of OpenESSENCE.

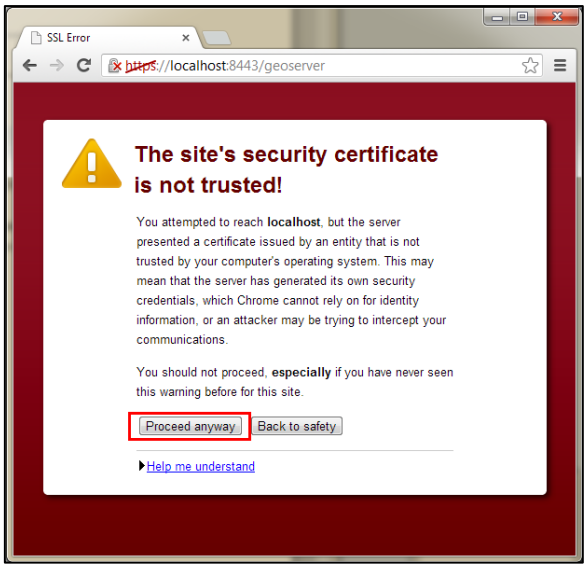


2. Log into GeoServer by opening your browser and going to

   https://localhost:8443/geoserver

   NOTE: You will see a warning about the site security certificate not being trusted. This is because we set up a self-signed certificate for SSL communication with the server.

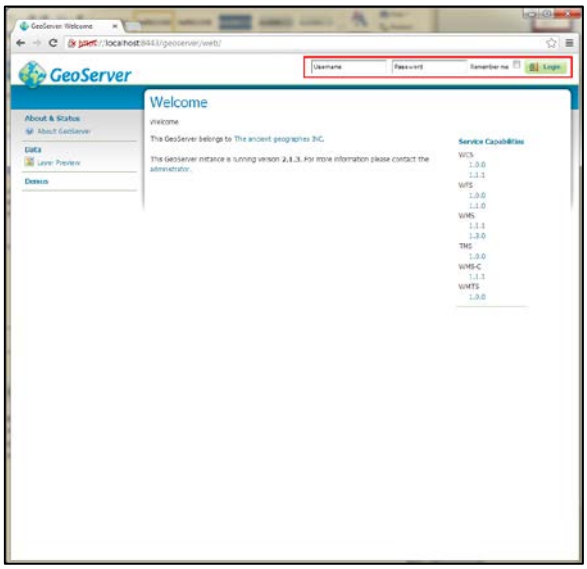
   Because we know this is our site, click **Proceed anyway** (we are using Chrome as the browser; your browser may display a slightly different message).



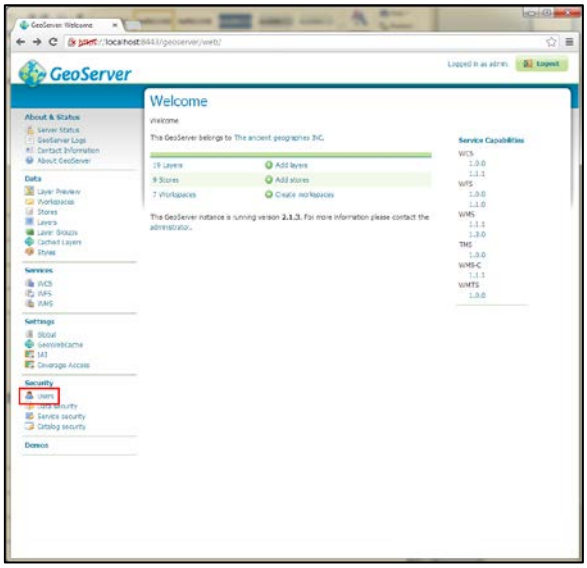
3. Log into GeoServer.

   The default login information is:

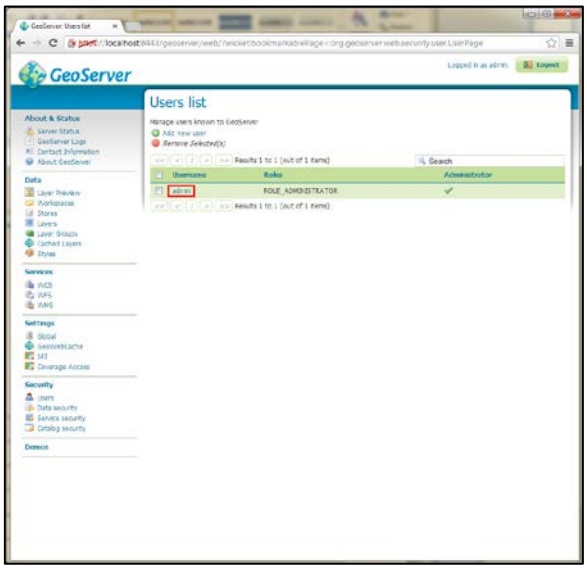
   user: `admin`
   password: `geoserver`



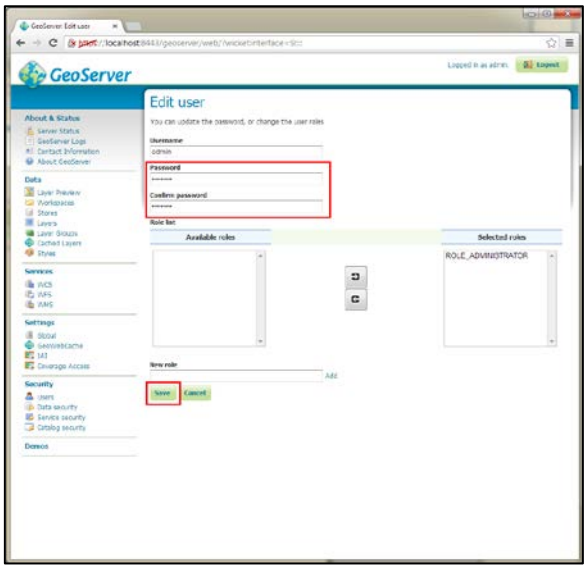
4. Change the admin password by clicking on **Users** under **Security**.



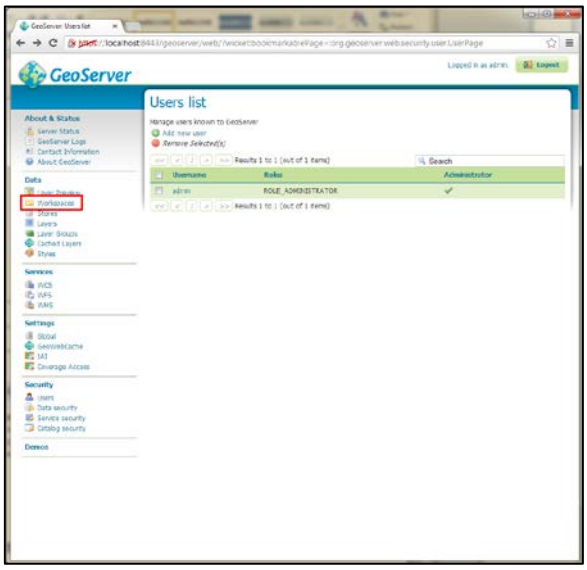
5. From the Users list, select the **admin** user.



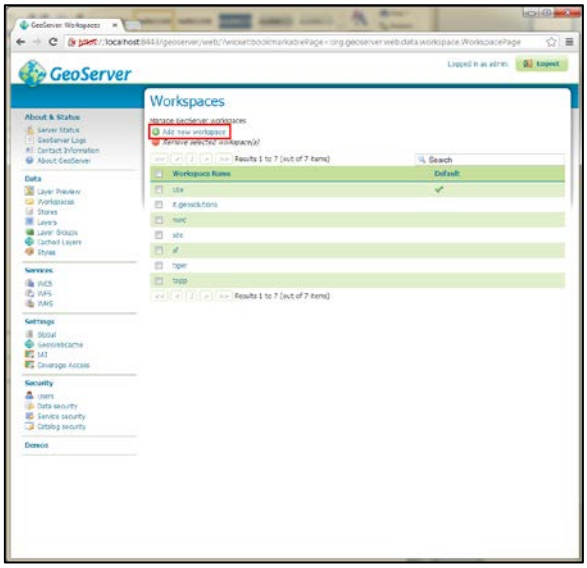
6. Change the password and click **Save**. Note the password; it will be used again during the installation.



7. Next, you will need to create a workspace to hold the data store. Click **Workspaces** under **Data**.



8. Click **Add new workspace**.



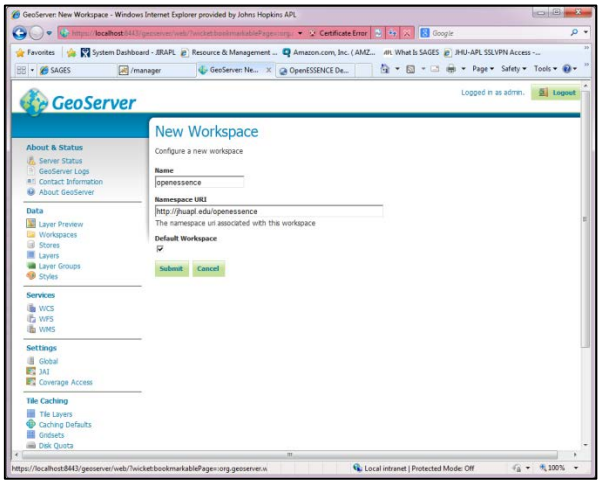
9. Enter `openessence` as the name of the workspace.

   Enter a namespace URI that is appropriate for your organization; for example, JHU/APL might use:

   `http://jhuapl.edu/openessence`

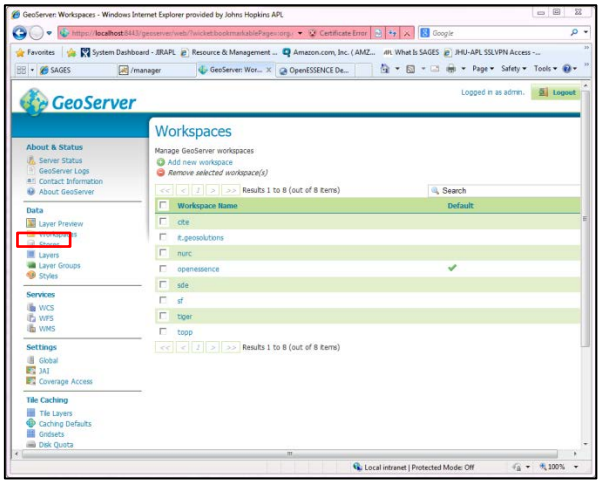
   Check the **Default Workspace** box.

   Click **Submit** to create the workspace.

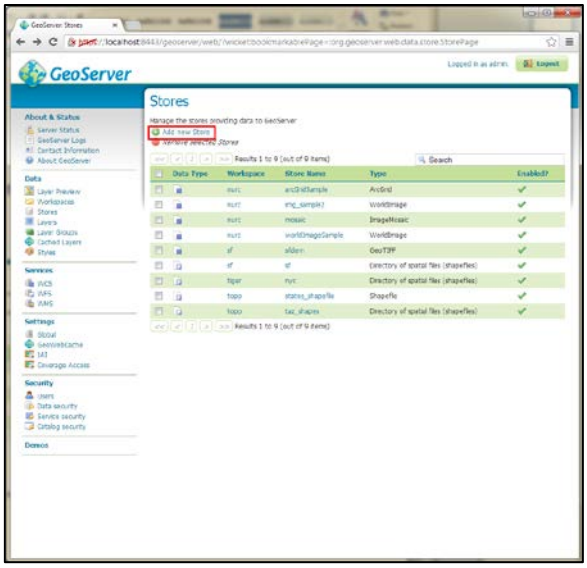


10. Next, you will need to create a data store.

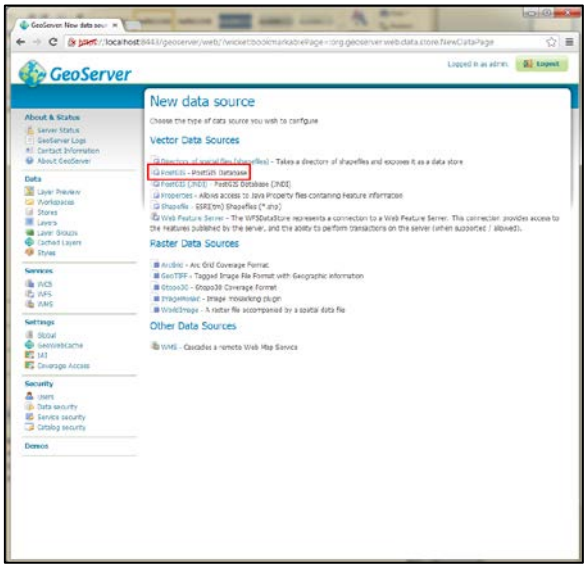
    Click **Stores** under **Data**.



11. Click **Add new Store**.



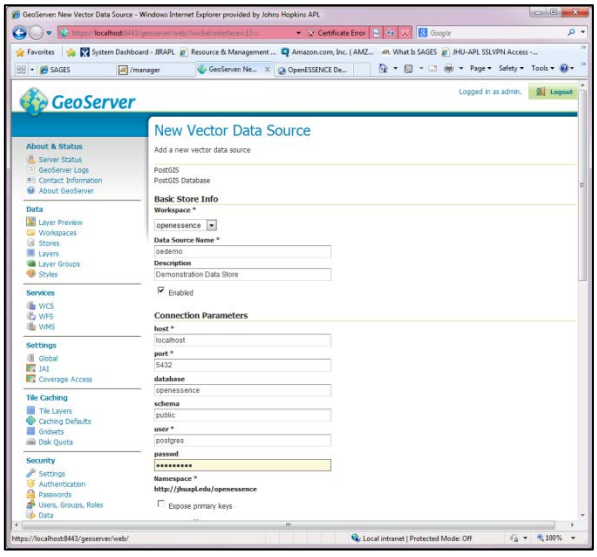
12. Select **PostGIS – PostGIS Database**.



13. Enter the following data source information:

    - **Data Source Name** – the name you want to give your data store. For example `oedemo`
    - **Description** – a short description of the data store
    - **Database** – enter `openessence`
    - **Schema** – enter `public`
    - **User** – enter `postgres`
    - **Passwd** - enter your PostGres user password

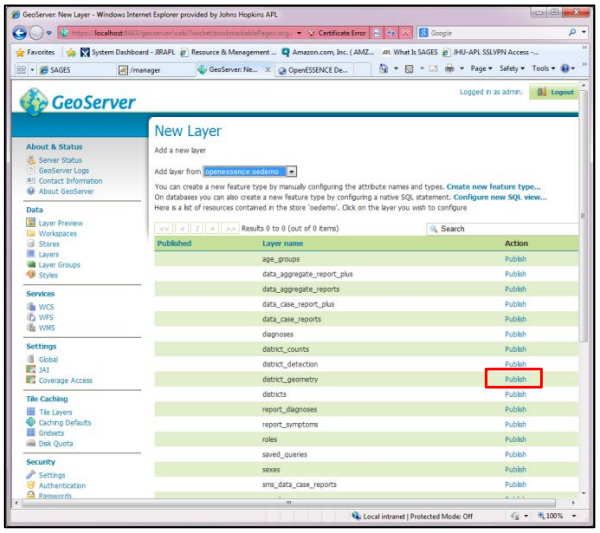
    Scroll down and click **Save**.



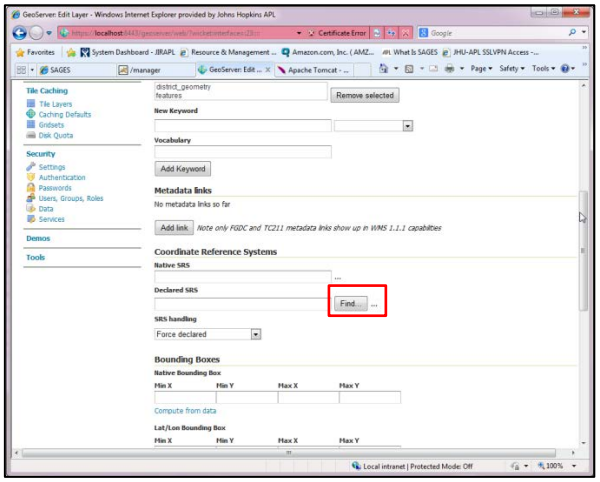
14. Choose layers to publish.

    We will use `district_geometry` from the openessence database as the base layer.

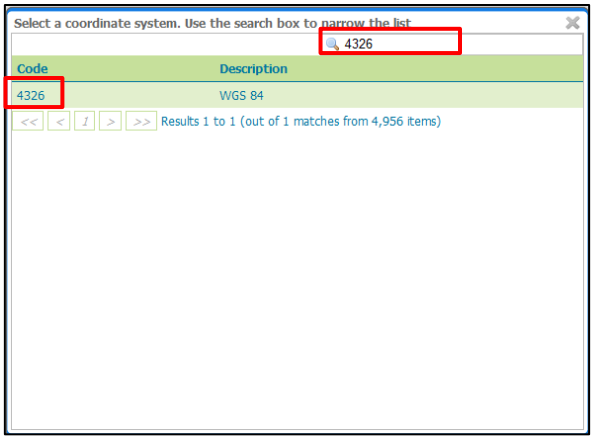
    Click **Publish** next to `district_geometry`.



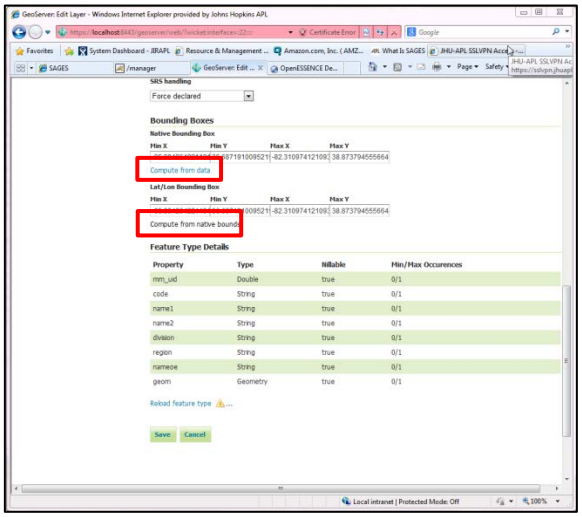
15. On the **Edit** Layer form, scroll down to the **Coordinate Reference Systems** section. Click **Find** next to **Declared SRS**.



16. In the **Search** box, type 4326 and press ENTER. In the results list, click **4326**.



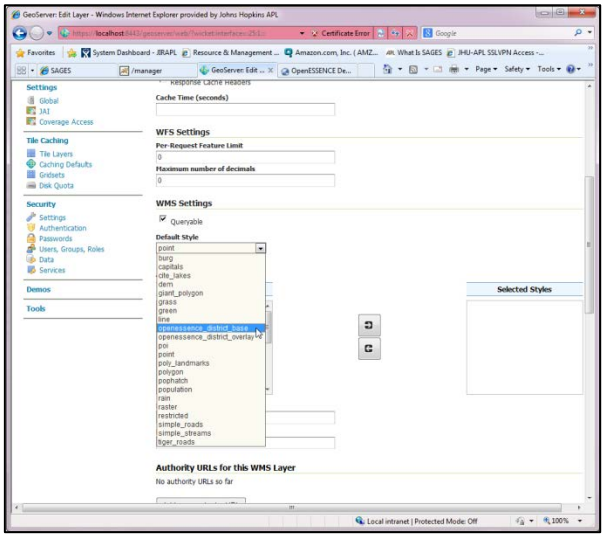
17. Click **Compute from data** and **Compute from Native Bounds**.



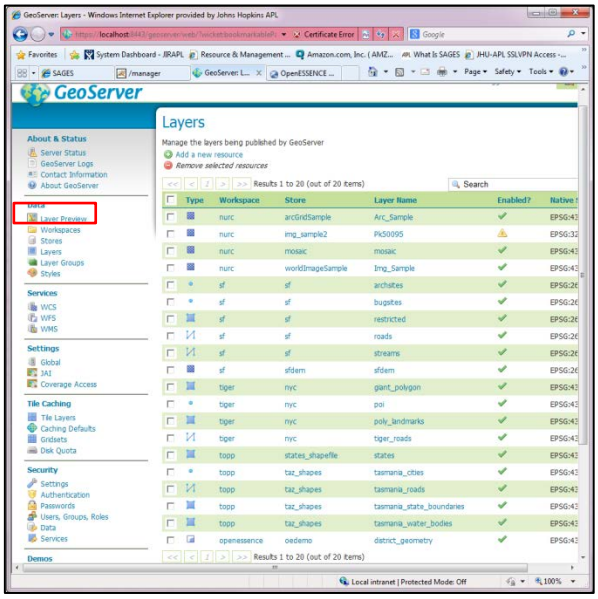
18. Choose a style for the layer.

    Click the **Publishing** tab. Scroll down to **Default Style** under **WMS Settings**. Select the **openessence_district_base** style.

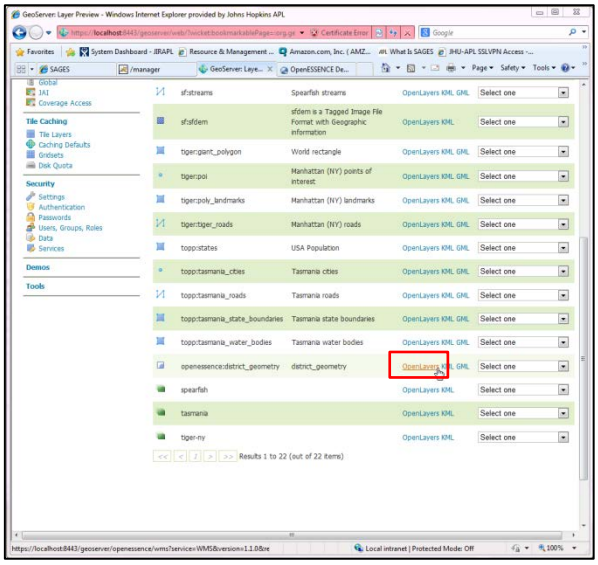
    Press **Save** to save the layer.



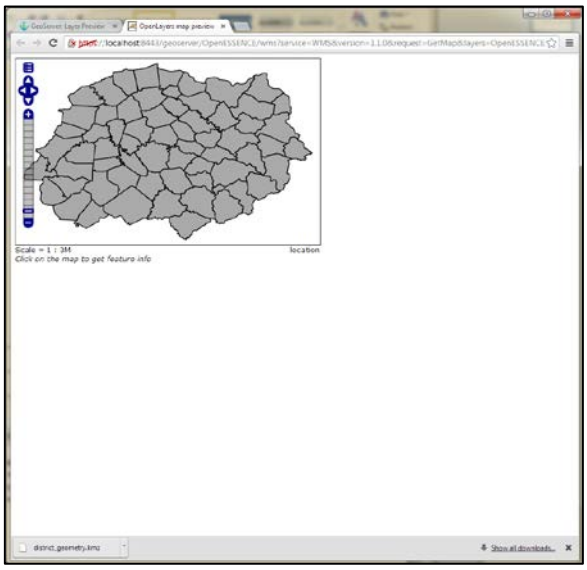
19. Click **Layer Preview** to verify that the layer works properly.



20. Scroll down and click **OpenLayers** next to `openessence:district_geometry`.



21. You will see the layer displayed. This is the `district_geometry` layer.

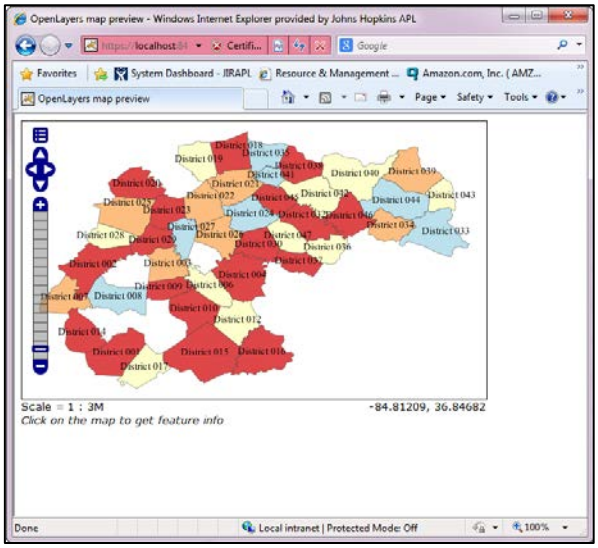


22. We now need to add an overlay layer. Repeat steps 14-20.

    For step 14, select `district_counts` from openessence to publish.

    For step 18, on the **Publishing** tab, choose `openessence_district_overlay` as the default style.

    For step 20, click **OpenLayers** next to `openessence:district_counts`. The layer is shown on the right.

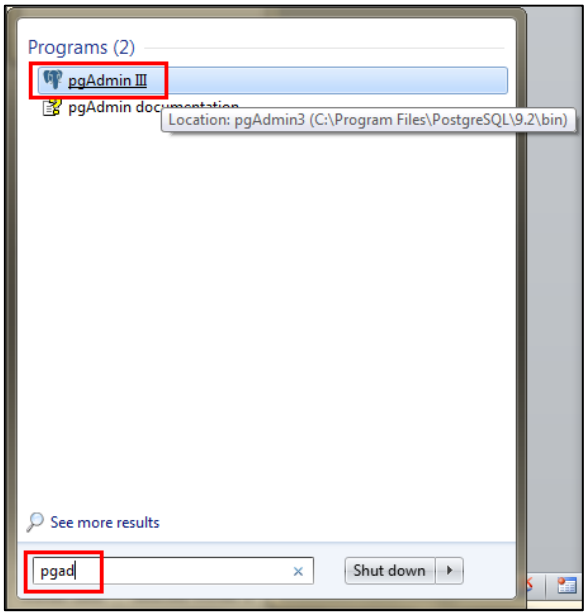


Resetting the OpenESSENCE Administrator Password

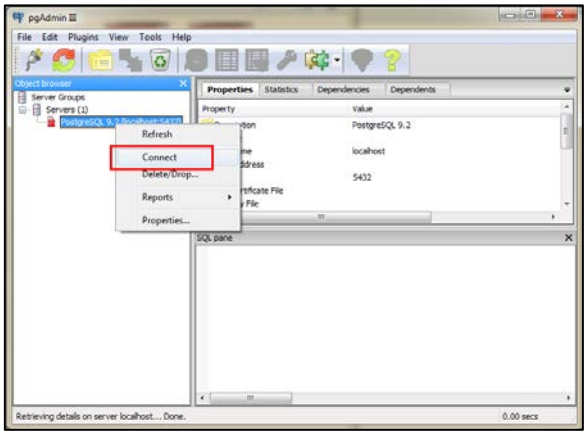
To reset the OpenESSENCE webapp administrator password (for the `admin` account):

1. Launch the PostgreSQL administrative tool by doing the following:

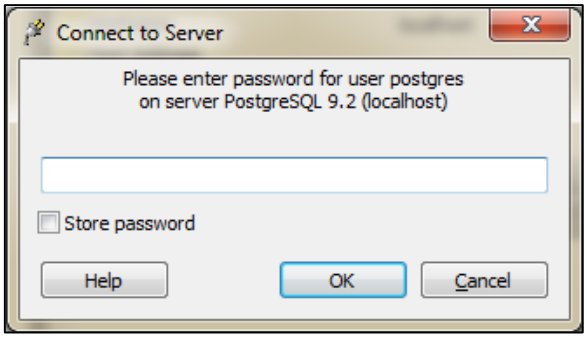
    a) Click the Windows **Start** button
    b) Start typing `pgadmin` in the text box
    c) When **pgAdmin III** appears in the **Programs** list, select it



2. Right-click your server and choose **Connect**.

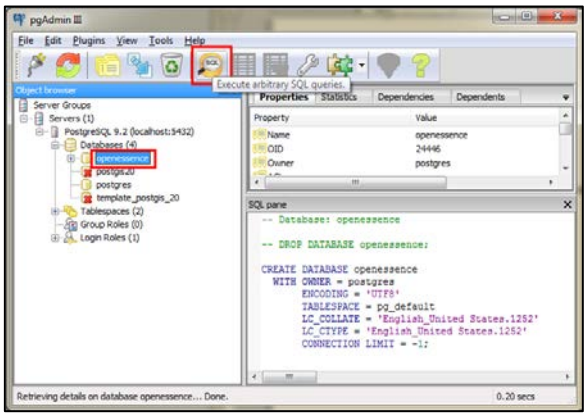


3. Enter your database password (the one associated with user ID *postgres*).



4. Select the database you are using.

   Click the **SQL** button on the toolbar to open the SQL query window.

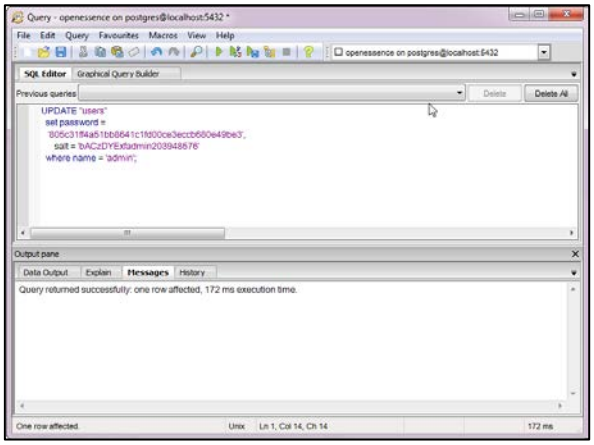


5. Delete the text that appears automatically in the **SQL Editor** window.

   Type (or copy/paste) the following SQL command in the editor window:

```
UPDATE "users"
  set password =

'805c31ff4a51bb8641c1fd00ce3eccb680e4
9be3',
      salt =
'bACzDYExfadmin203948576'
  where name = 'admin';
```



   Click **Execute Query** on the toolbar to set up the database.

   This will reset the administrator password to *admin*, for the `admin` account.

   You should *immediately* log into OpenESSENCE and change the administrator password (see next section).

Starting OpenEssence

Once everything is installed and configured, OpenESSENCE will run whenever the Tomcat server is running. Follow the steps below to start OpenESSENCE.

1. Open your browser and go to

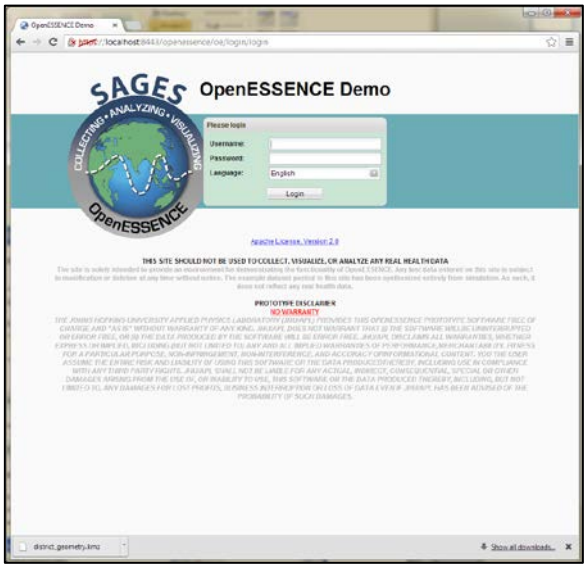
   https://localhost:8443/openessence

   (Depending on your browser, you may see the certificate warning before this page. Click **Proceed anyway**.)

   Enter the username and password from your database.

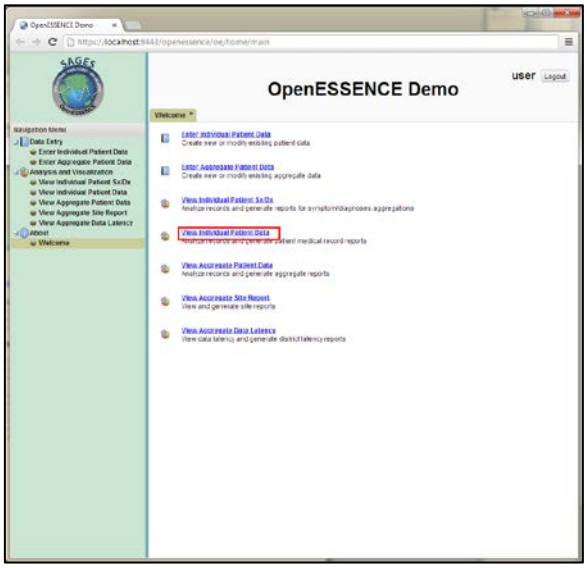
   Username: `admin`
   Password: `<password created in the previous section>`

   Username: `user`
   Password: `OEuser1`

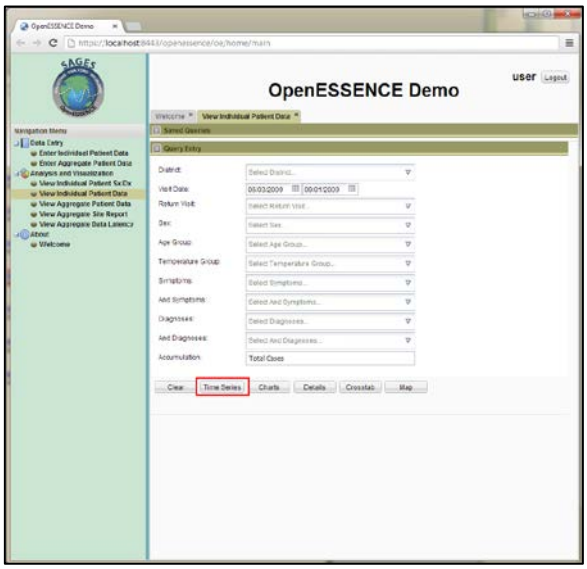


2. You should see the Welcome screen for the OpenESSENCE demo.

   To check proper operation, click **View Individual Patient Data**.



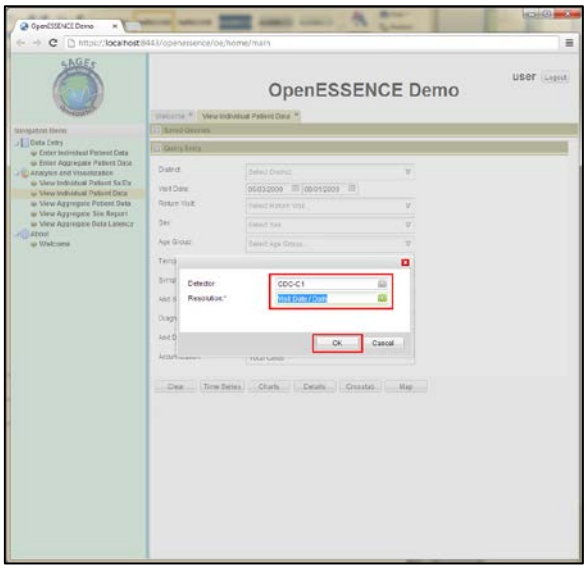
3. Click **Time Series**.



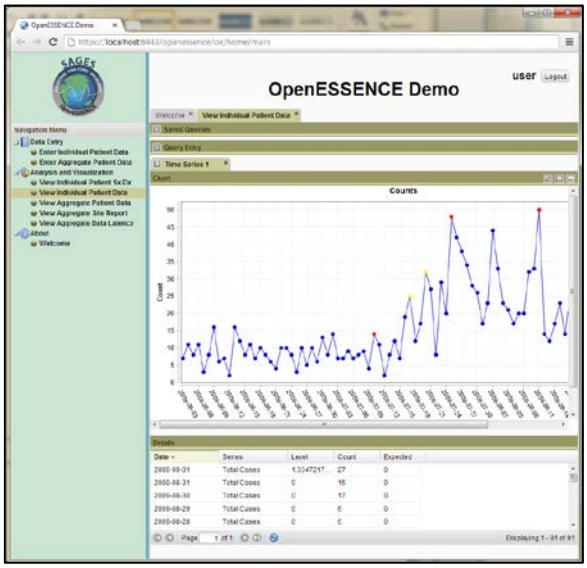
4. Choose **CDC-C1** for **Detector**.

   Choose **Visit Date / Daily** for **Resolution**.

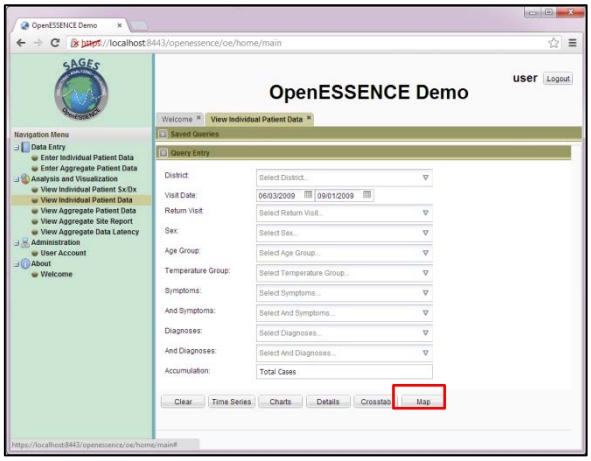
   Click **OK**.



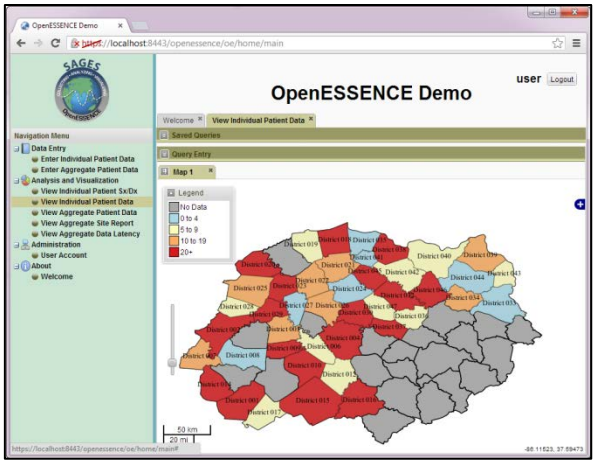
5. A time series chart should appear. This chart is based on demo data.



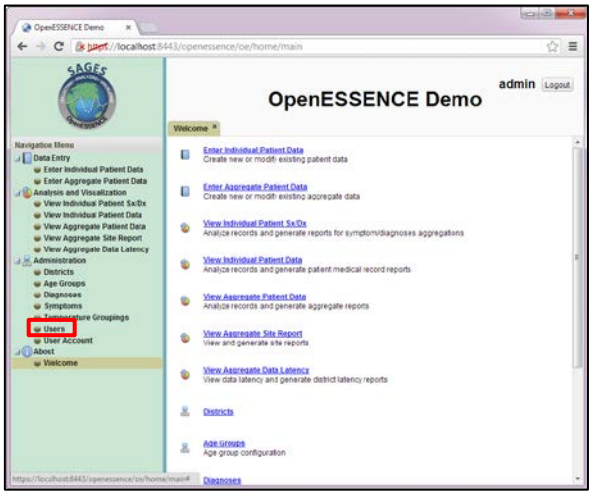
6. To check the map functionality, select **View Individual Patient Data** from the Navigation Menu and then click **Map**.



7. The following map will be displayed.



8. To change the password for the admin account, you must be logged in as admin. Select **Users** from the **Navigation Menu** under **Administration**.



9. Select the **admin** account from the list of users and then click **Edit** from the menu bar.

   Enter the new password (and confirm). Scroll down and click **Save**.