Setting up and Connecting to a PostgreSQL database

SETTING UP AND CONNECTING TO A POSTGRESQL DATABASE

Install and register Socrates on all the computers you want to access it from.

Step one: Download the database

You need to download the PostgreSQL database from the web. This application will be installed on the computer the database is to be located. This step is fairly straight forward if you follow all the screen prints below.

NOTE: ALL DATABASE NAMES AND PASSWORDS SHOULD BE IN LOWER CASE, AND NO SPACES.

Go to the following website...   http://www.postgresql.org/download/windows

... and click the Download link
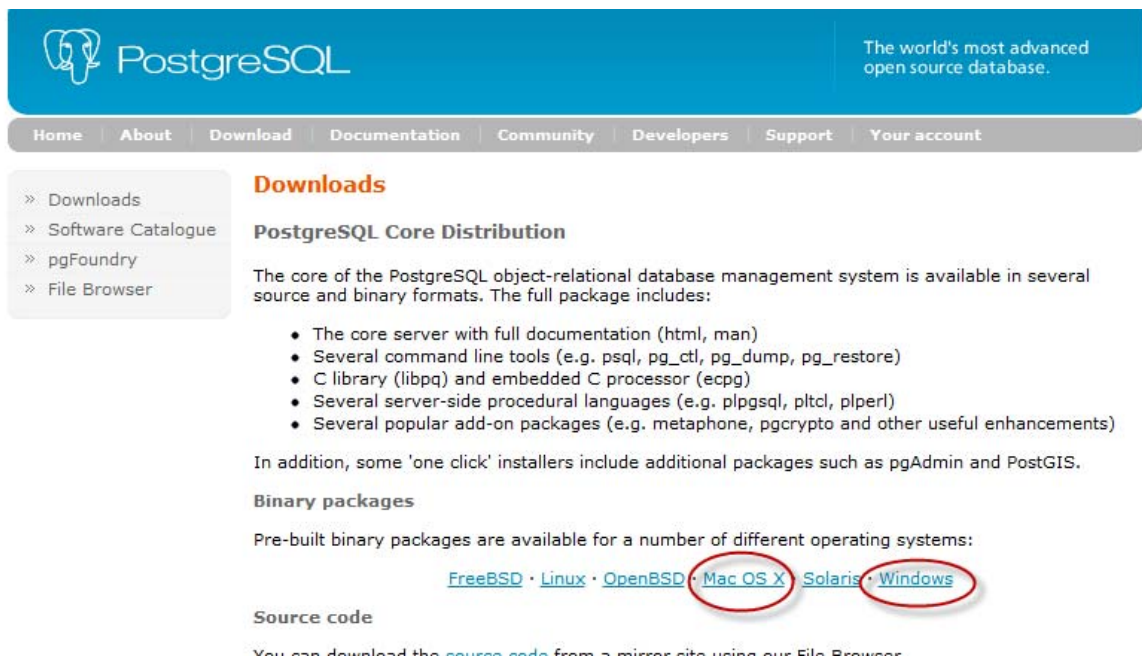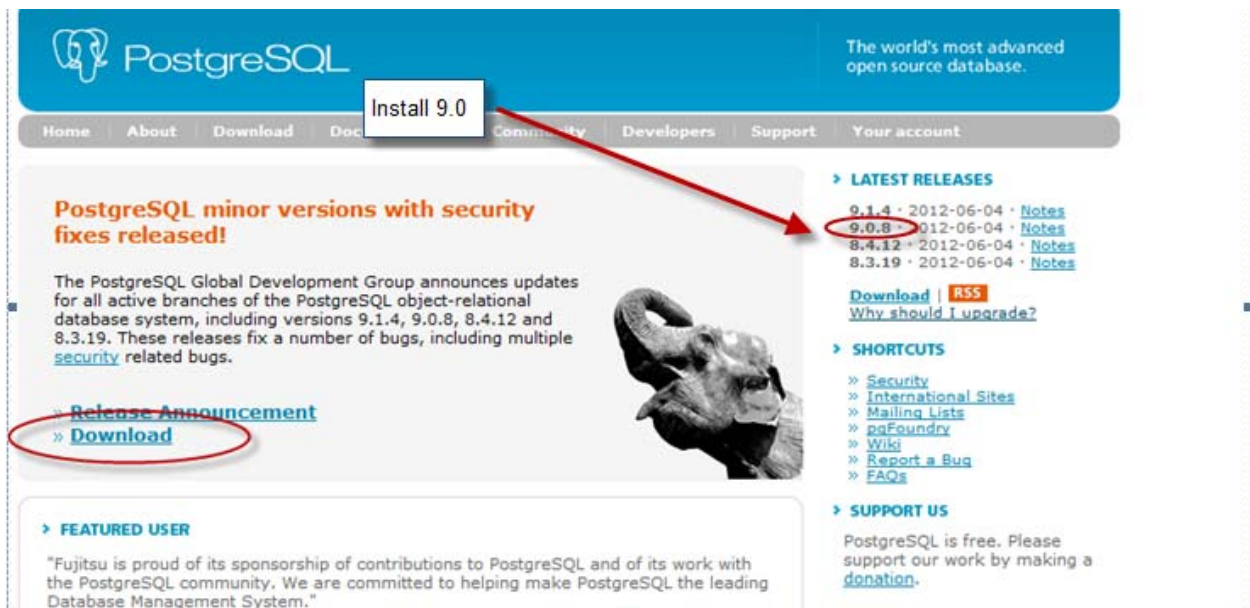
DO NOT USE VERSION 9.2……

Then select your operating system from the Version 9.0 selection. If you are a windows user you need to know if you have a 32 or 64 bit operating system. Note, we do not support Linux.

You don't need to register with the site, so you can ignore the registration page of the website.

When you see the following message, select SAVE file.

NOTE: Depending on which internet browser you use, you may need to allow popups in order to download the file. Or select click this link to download on the main page. Or, if you receive error messages, try using another browser such as Firefox or Google Chrome.
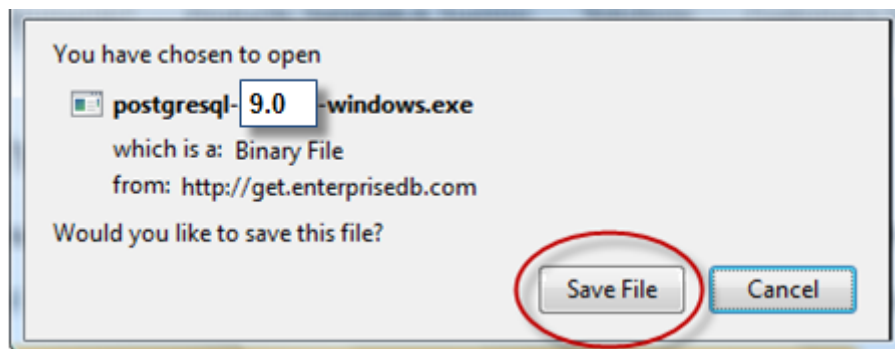
If you see a message asking where you want to save the file, just save it to your default 'Downloads' folder.

Once downloading is complete, you will then need to run the '.exe' file from your downloads folder. Usually you can just double-click on the filename to start installation. If you get a Windows "user account control" message, just click "Allow" to let Windows run the file. Then run through the installation process as per the following screen prints.
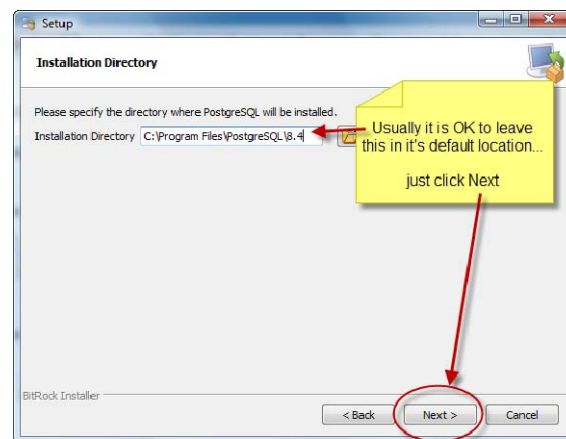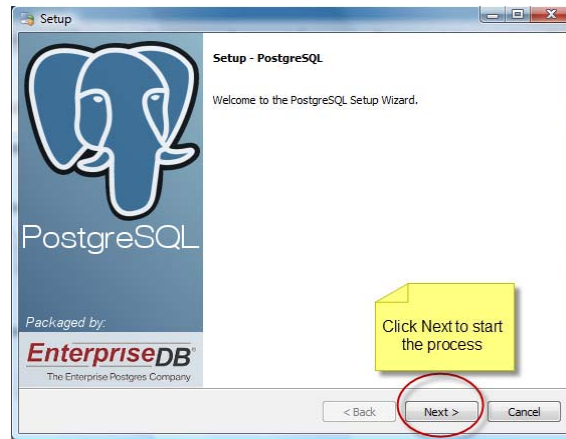
Note: This is the PostgreSQL application installation directory – usually it is fine to leave this as the default unless your site has a non standard application directory structure.
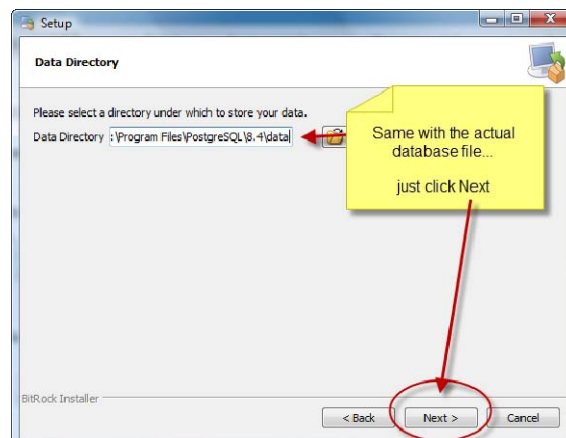
NOTE: If you wish to store your database data in a different location this is where you will need to set that location. Most sites will wish to change this to a location that can be conveniently backed up.
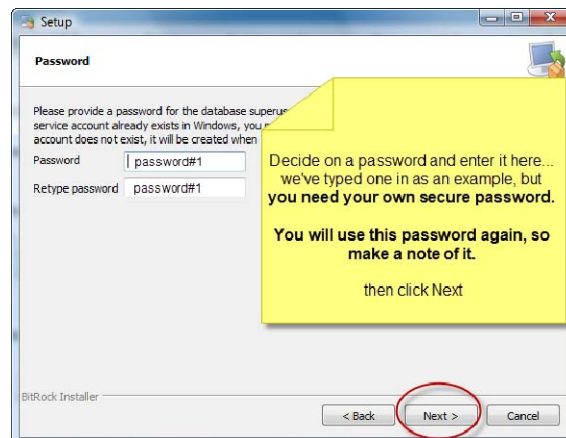
NOTE: You need this password to connect to the server, so make a note of it.
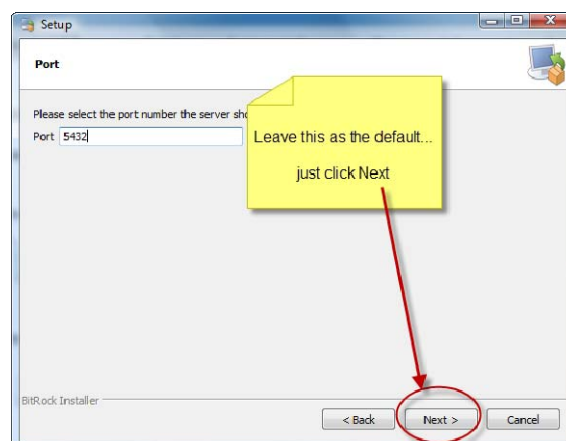
NOTE: 5432 is the standard port PostgreSQL runs on however it is possible to change this should you wish to.

Make a note of the port number as you may need to open it in your firewall later.
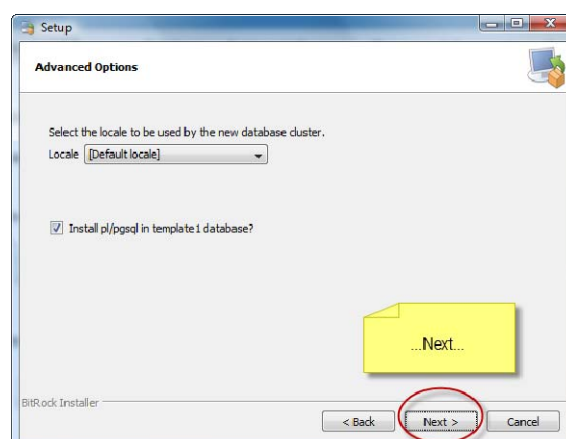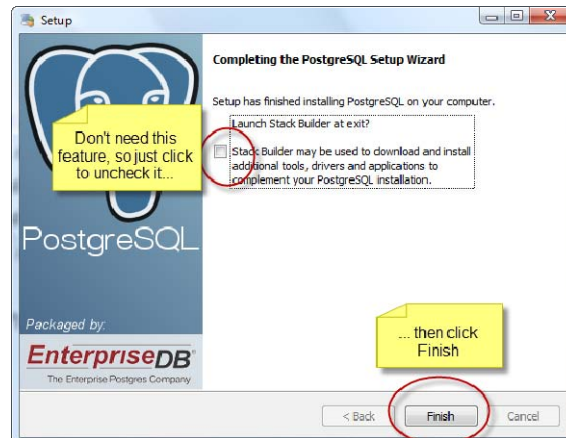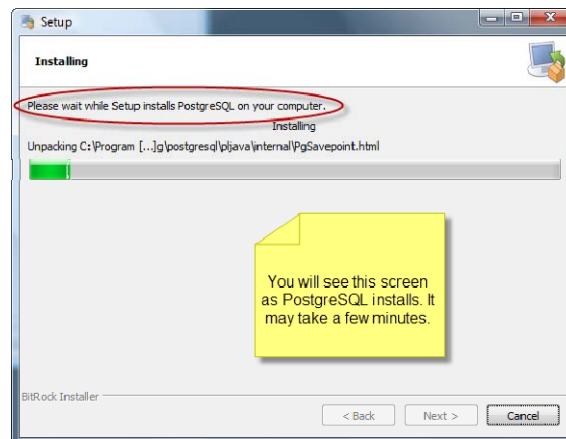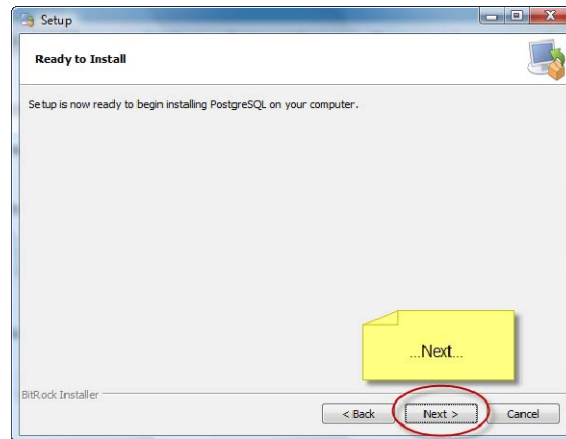
Finished. OK, now you have completed Step 1. Now, you need to configure settings for PostgreSQL

Step two: Configure settings

Go to your windows Start menu and select All Programs, then click on the PostgresSQL 9.0 → pgAdminIII program, then follow the process as per the screen prints below.
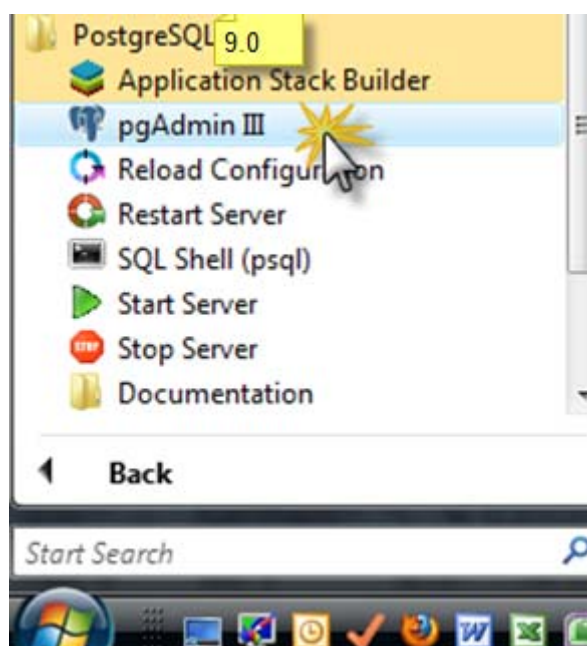
Double click on the PosgreSQL server and then you will have to type in your password

Connect to Server

Please enter password for user postgres
on server PostgreSQL 8.4 (localhost)

password#1

☐ Store password

Enter password (that you typed in before)...

Help   OK   Cancel

pgAdmin III

File Edit Plugins View Tools Help

Object browser

Servers (1)
  PostgreSQL 8.4 (localhost: 5432)
    Databases (1)
    Tablespaces (2)
    Group Roles (0)
    Login Roles (1)
      Refresh
      New Login Role...
      Object list report

Properties Statistics Dependencies Dependents

Login Role   Owner   Comment

postgres

Now, right click on Login Roles, and select New Login Role...

SQL pane

Retrieving Login Roles details... Done.   0.00 secs

NOTE: None of these passwords will ever be used to login to Socrates. They are purely for the PostgreSQL database setup.
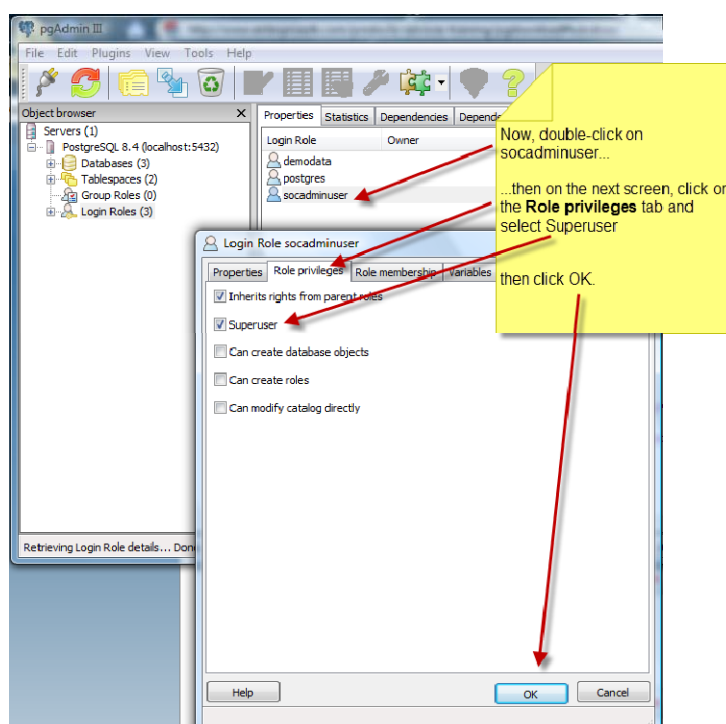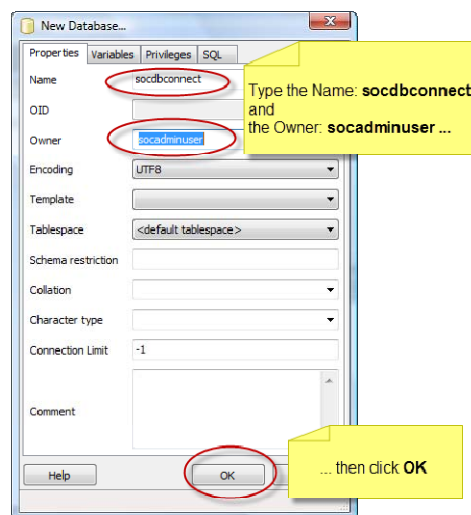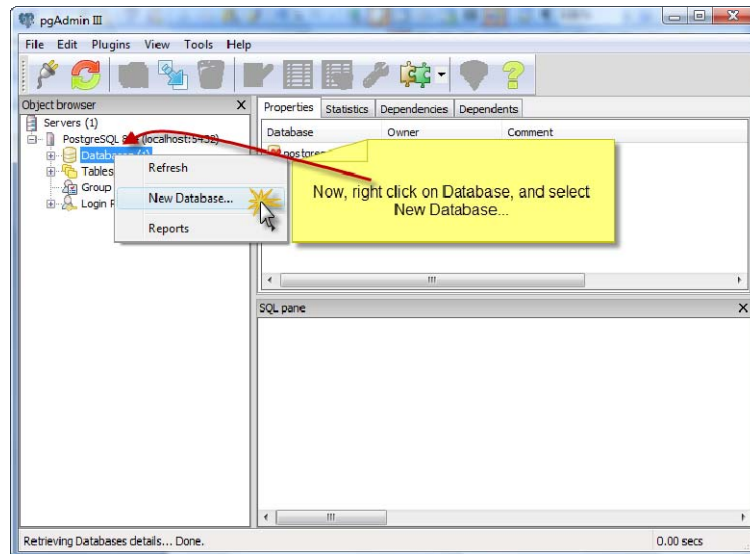
So, on to the next stage. We are nearly there!

Step three: Connect to the database

Open your Socrates program, and BEFORE you log in, go to the drop-down menu Database _ Manage Server Admin Login Connection.
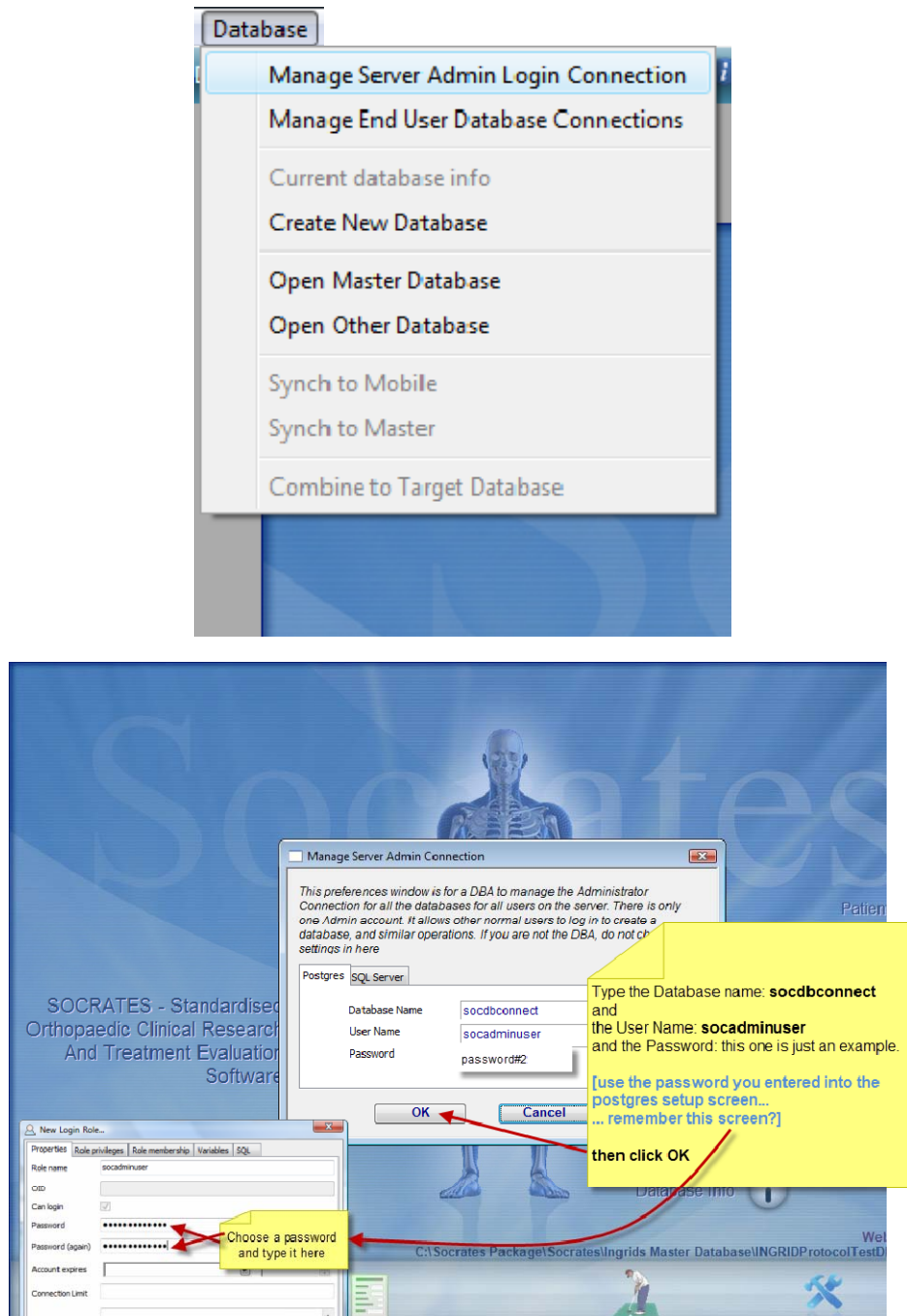
Once you have clicked OK you have to set up the connections to your PostgreSQL database, you don't need to do this again. If you don't do this and a local machine runs an update they will not be able to logon into the database once the update is run. If you are doing multiple installations, and have copied the settings across from a machine that has already had this done, you won't need to do this on each machine.

CONFIGURING CLIENT ACCESS USING PG_HBA.CONF

This section covers setting up what client computers are allowed to access on your PostgreSQL database server.

Overview

PostgreSQL by default only allows access to the database server from the computer it is running on. To allow external computers to access databases running on this server it is necessary to modify the pg_hba.conf file and specify what range of ip addresses are allowed access. Before continuing this process make sure you are aware of what address range you wish to allow access.

This file lives in the PostgreSQL data directory that was specified at install time. Initial permissions on this directory will not allow any user other than the postgres user created on setup to access it so first we need to modify the permissions to allow access to the file.

Changing Permissions on the pg_hba.conf file

This process is different depending on if you are running on a Windows or Mac system. In either case, make sure you are logged in as a user with Administrator privileges before starting the process.

Windows

Open up windows explorer and browse to the data directory specified during the install. The default data directory will be "C:\Program Files\PostgreSQL\9.0\data\". Once there right click on the data directory and enter the security tab of the properties window. We recommend adding just the admin user you are logged in as with full control. Once you have added this user, depending on your Windows version, you may need to apply these settings to all subfolders and files as well.

Mac

Open up a new Finder window and browse to your PostgreSQL data directory. By default this will be "/Library/PostgreSQL/9.0/data". Once there you will need to right click on the data directory and select the Get Info menu command. Click the padlock on the bottom right of the info window and enter your password to unlock the ability to change permissions. Click the plus icon on the bottom left of the window to add your current user to the permissions list. Set that user's privileges to Read & Write then click the gear icon below and select "apply to enclosed items..." and confirm the next message window.

Modifying pg_hba.conf from pgAdmin

Open the pgAdmin application and from the File menu select "Open pg_hba.conf...". This will allow you to browse for the location of the file which will be in the data directory specified during installation. See the above paragraphs for default locations of this data directory. This will open up the Backend Access Configuration Editor window.

Double click on the empty line below the existing entries to bring up the Client Access Configuration window. Set the Type to host, Database to all, User to all and method to md5.

The IP address field needs to be the start IP address in the range you wish to have access (i.e 192.168.0.1) with a subnet mask in CIDR notation.

Examples would be:

Single address only

192.168.0.1/32 (equivalent to 192.168.0.1 with a subnet mask of 255.255.255.255)

Range of addresses (in this case allowing anything in the 192.168.0.x subnet)

192.168.0.1/24 (equivalent to 192.168.0.1 with a subnet mask of 255.255.255.0)

Click Ok to add the record and click the Save icon in the Backend Configuration window to save the configuration.

CREATING A NEW POSTGRESQL DATABASE

You now need to create the database that you will start using. Do not enter any real patients into the demo data file.

NOTE: If you are converting/duplicating an existing Omnis database to PostgreSQL go to page 19.

Go to the Database drop-down menu on the top left and select Create New database.
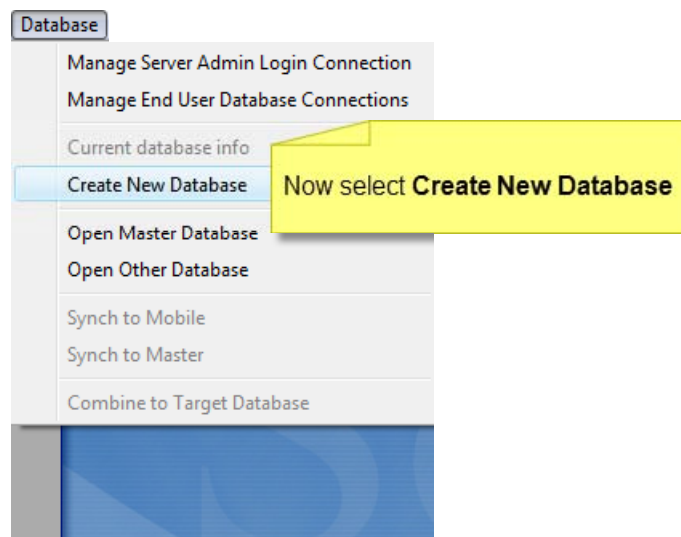
This window will appear.
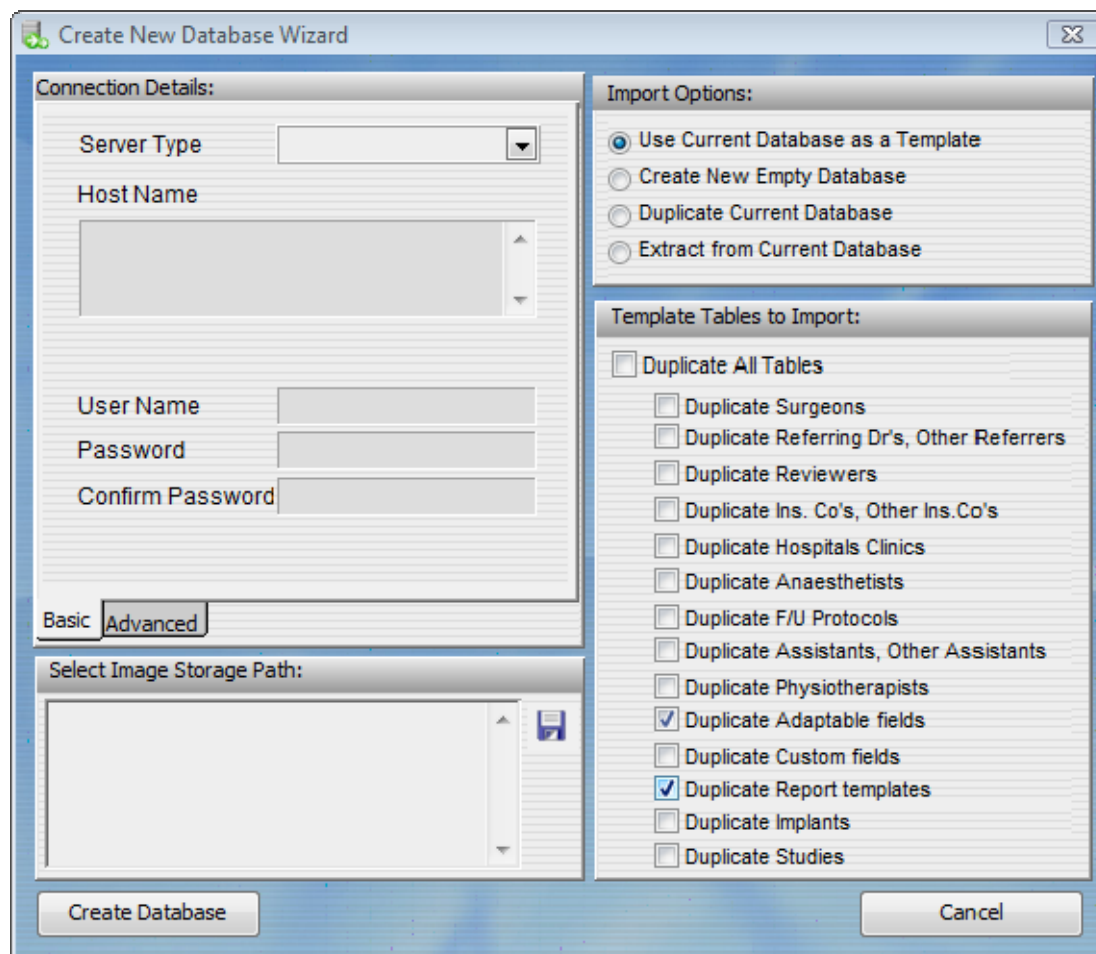
Import options

If you are logged into an existing database all the options are possible. If you are not logged in to another database, only creating a new empty database is available as an option, as the other options involve copying something from an existing database which can't be done if you are not logged into one.

Import Options:
- ⊙ Use Current Database as a Template
- ○ Create New Empty Database
- ○ Duplicate Current Database
- ○ Extract Selection from Current Database

You can always delete and modify these later. Log in to the demo file using **Admin** as the user name, and **Admin** as the password.

Admin for both

You are now logged into the Demo database and you are on the Home screen - where the image of the skeleton is with all the icons for patients, statistics etc. Follow the steps described below.

Use Current Database as a template or Create new empty Database

Choose either of these options if you are a new user creating your own new database. Both of these will create a new file 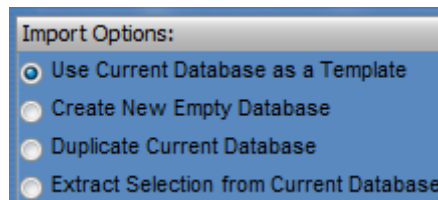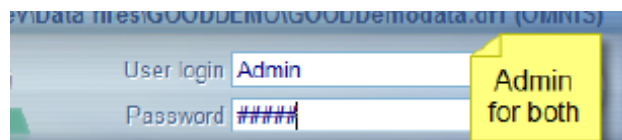empty of any patients and surgery records. If you have decided to keep the default lists of adaptable fields, as we recommend, select *Use current database* as a template. If you choose *Create a new empty database* these will all be empty. Note that it is only available as an option if you are currently logged into an existing Socrates database, in the case of new users this would be the demo database.

If you choose option 1 you will notice that only Duplicate Adaptable fields and Duplicate Documents templates are selected.

- ☑ Duplicate Adaptable fields
- ☐ Duplicate Custom fields
- ☑ Duplicate Report templates
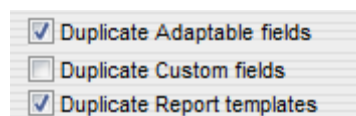
This option is recommended when you are first setting up your new database. It will transfer the default lists of adaptable fields which we recommend (diagnosis, complications, procedure names, comorbidities etc) from the demo database. To do this you should now be logged into this demo database and be on the Home screen which shows the Socrates skeleton.
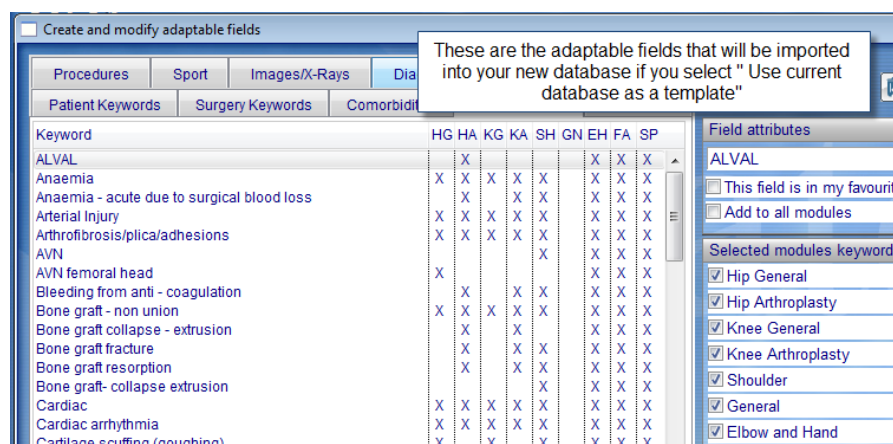
Steps to creating your new database

1)   **Server type:** Choose PostgreSQL as the server type.

2)   **Import options:** Select the option you want, usually "use your current database as a template". Leave the Duplicate Adaptable fields and Duplicate Report Templates boxes checked. If are not logged into the demo database file, or the file you want to copy or use as a template, this area will be greyed out. You can't reproduce or copy anything from an existing database t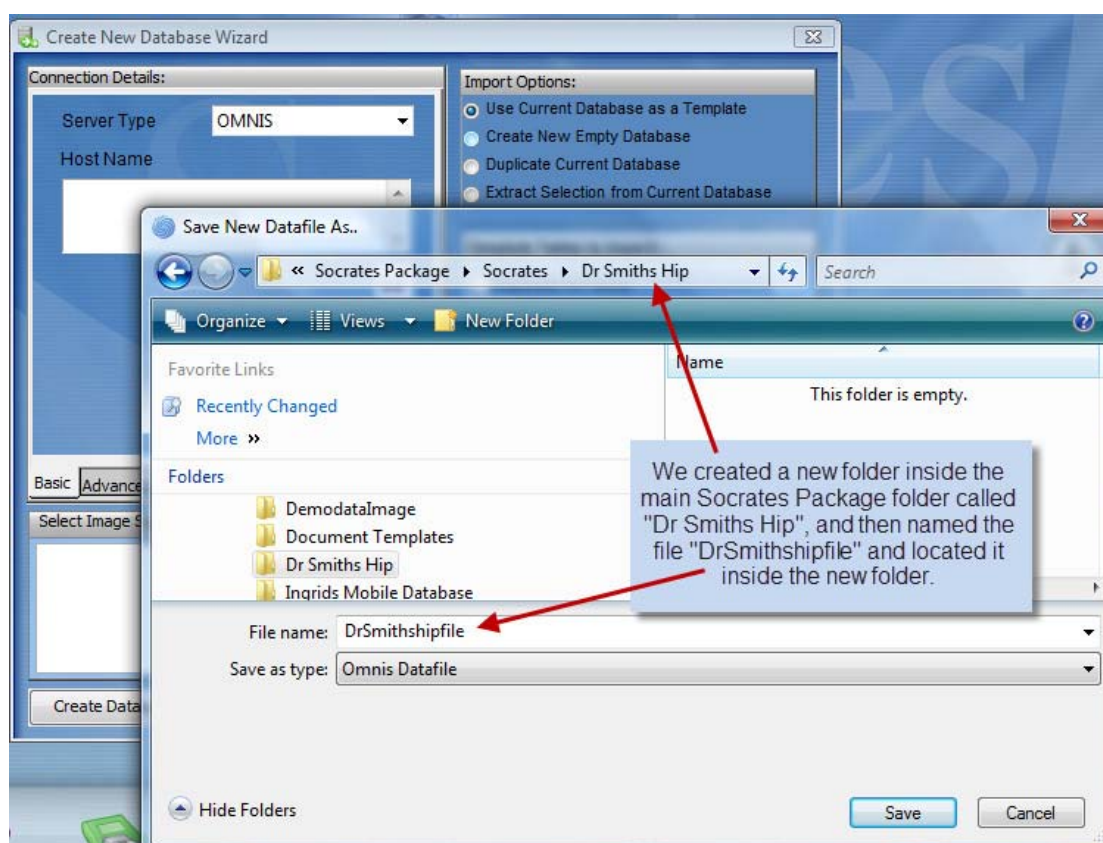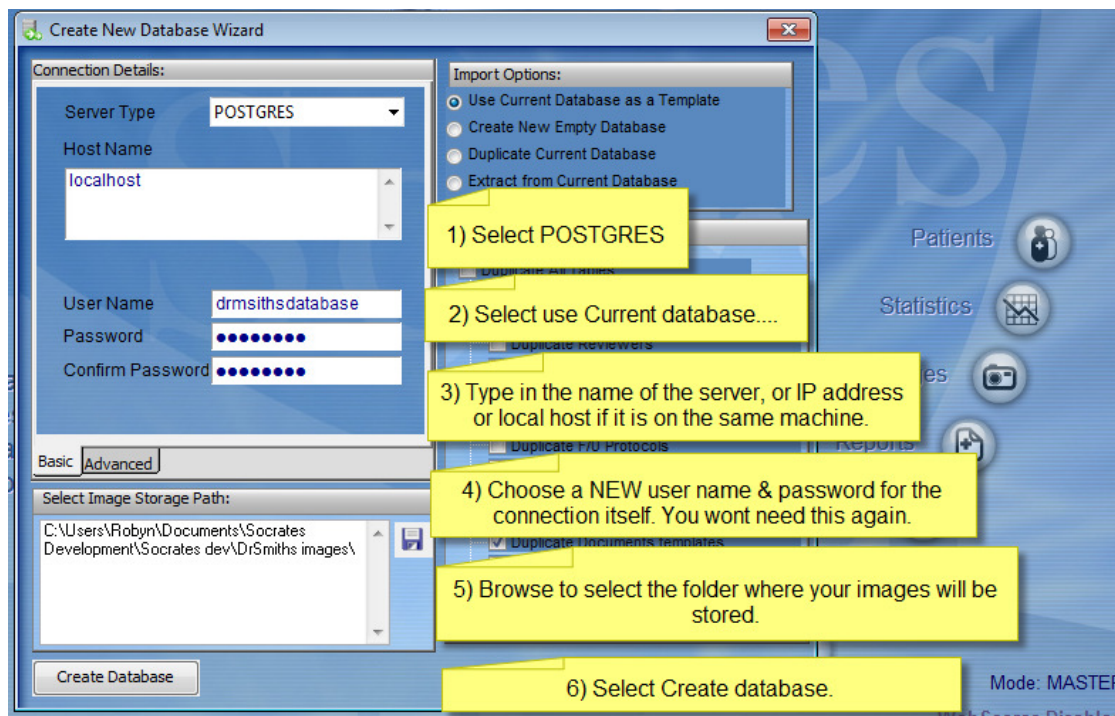hat you are not logged into. If this is the case click cancel, then log in to the database with Admin, Admin and start again.

3)   **Host name:** Hostname will be the name of your server or its IP address. You can use localhost or 127.0.0.1 if you are connecting to a PostgreSQL database running on the same machine as your client. This is often used for Terminal Services set ups where the PostgreSQL database is running on the Terminal Services server and all clients are only running from that server.

4)   **User Name and Password:** Type in the name of your new Socrates database. **USE ALL LOWER CASE** and no spaces – examples drsmithsdatabase, princewobbypatients, stelsewherehips. Then type in a password; this isn't the password for your Socrates database, and you won't need this again.

5)   **Select Image storage path** - Browse to an existing folder, or make a new folder where you want the X-rays, videos and other document you might want to attach to the patient's record. Even if you don't think you will use this feature you should still create a folder, as you might change your mind down the track.

We created a new folder inside the main Socrates Package folder called "Dr Smiths Hip", and then named the file "DrSmithshipfile" and located it inside the new folder.

Here's what the screen should look like.

Once everything is in place click Create Database and it will start to create the tables and your new empty database. When it's finished you will see this message.
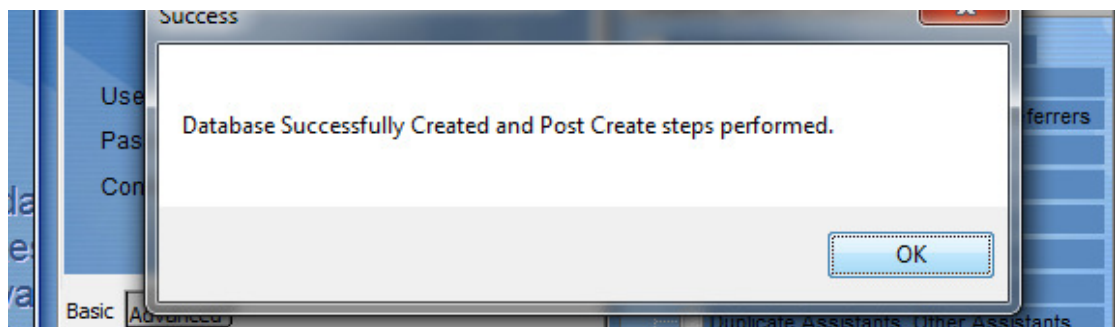
Connecting to your new database

Once you have created your database, you need to connect to it as you are still in the demo database at this stage. Log out of this (click the yellow folder icon to go back to the login screen). If you want this database to be set as the master database go to the file menu, top left hand corner and select Manage End User database connections.

Highlight the file with the name of your new database or the one you want to connect to. If this will be your main or master database select Set Master Connection. This sets your database as the master and if you are ever logging into other databases you can always return easily to this database, as the program "remembers" where it is when you select Open Master Database. You can also test that it will successfully connect by selecting *Test Selected Connection.*

You can then click on Open Selected Connection.

Or you can go to Database → Open Other Database – all available databases will be displayed.

You are now ready to log into your new Socrates database. Use Admin and Admin to log in.

If you haven't already you should read through Chapters 1,4,5,6 and 7 of the manual.

That's it ! You can now start using your PostgreSQL database.

CONVERTING YOUR OMNIS FILE TO A POSTGRESQL OR MSSQL FILE.

To duplicate a file you must be logged into the Omnis database file that you want to duplicate. It will create a new database that is an exact replica of that database. This is normally used when transitioning to different database server types or copying your file.

This is quite a simple process, as it is effectively duplicating a file and then choosing which database base format you would like it to be copied into. Then, follow the instructions for the appropriate database for how to select the connections, host name etc. If you are converting a large database it might take several hours for it to duplicate.

Note: It is always a good idea to make sure that you have a backup for your file any time that you are converting or doing anything to it.

The steps to follow are below. You need to be logged into the database file that you are copying/converting to the new format.

Once you have selected *Create Database* the conversion/copying starts. It will give you a message when it has finished.

Encryption of patient details (PHI)

It is possible to encrypt the PHI details of the patient at database level. Note that this will result in some loss of performance when searching and exporting data which contains these fields. By default when a new database is created this is NOT selected. If you need this feature select this as an option. Otherwise you would normally not need to go to the advanced tab.
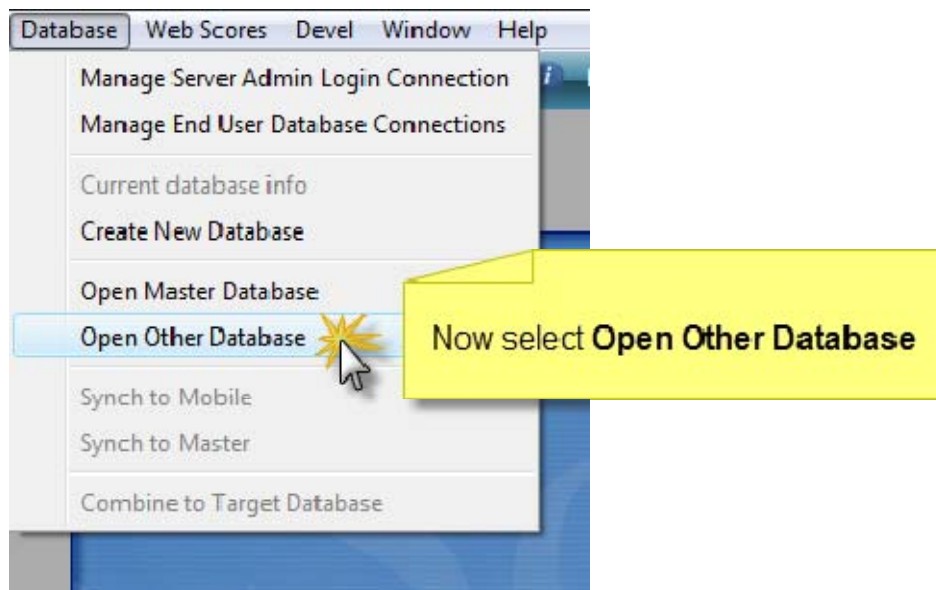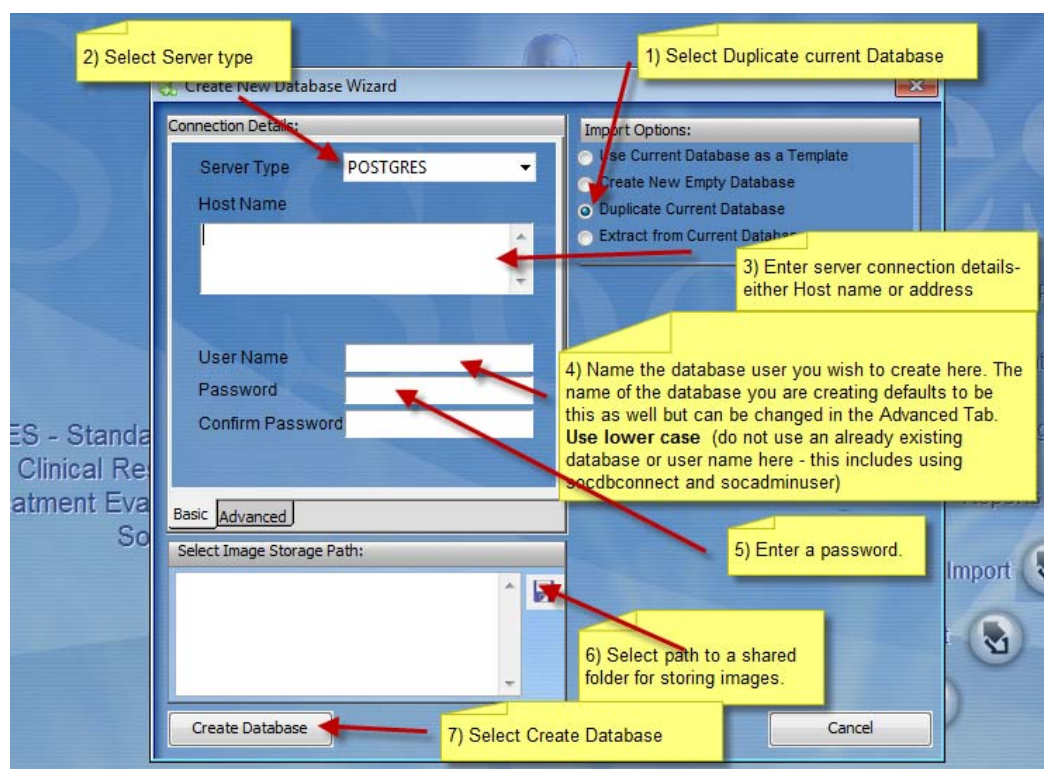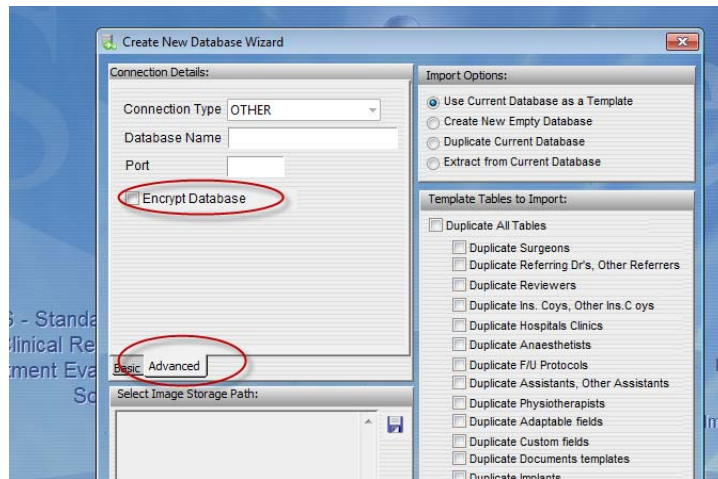
Connecting to your new database

Once you have created your database, you need to connect to it as you are still in the previous database at this stage. Log out of the database you are in, (click the yellow folder icon to go back to the login screen).

Go to the file menu, top left hand corner and select *Manage End User database connections*.
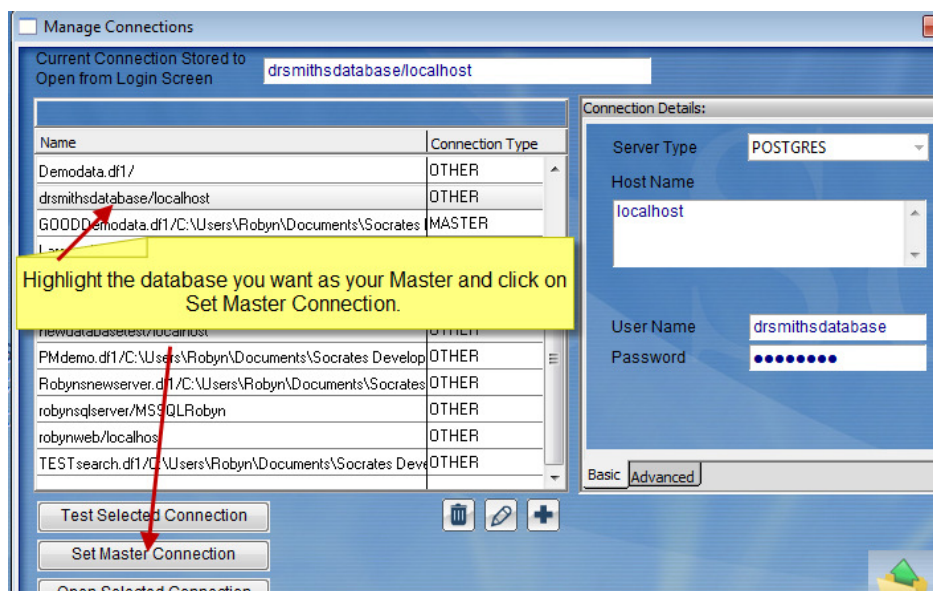
Highlight the file with the name of your new database or the one you want to connect to. If this will be your main or master database select Set Master Connection. This sets your database as the master and if you are ever logging into other databases you can always return easily to this database, as the program "remembers" where it is when you select Open Master database. You can also test that it will successfully connect by selecting *Test Selected Connection.*

You can then click on *Open selected connection.*

Or you can go to Database → Open Other Database – all available databases will be displayed.

Now select **Open Other Database**

Select the one you want from the list.

You are now ready to log into your new Socrates database. Use the same log in as your old database.

Tip for network / multiple installations

You have now installed the new version on one machine, registered it and connected it to your new SQL database. If you have multiple workstations you can copy the settings and connections files from this first installation and all new installations will be automatically be registered and connected to the database.

1) Create a folder called Socrates. Inside this folder, create an empty folder called *defaults*.

2) Install the unzipped installation file inside the main folder you created.

3) On the installation you have just completed go to Users >Roaming>App Data>Socrates. Copy the *SCprefs.df1*, *SCconnections.*df1 and *CodeDati.txt* files into the Socrates folder you created with the installer and the defaults folder inside. Please note: if you copy the SCConnections.df1 from a machine that uses a hostname of localhost to another machine, the connection will not work. Localhost will only function on the machine where PostgreSQL is running locally.
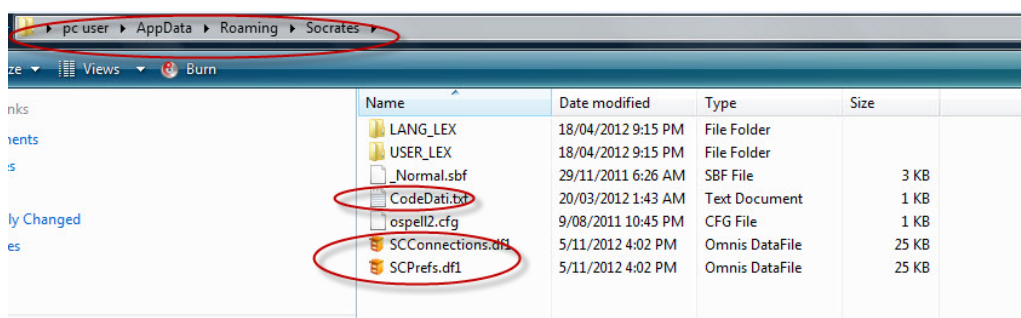
4) Go to Program files>Socrates and copy the serial.txt file to the same folder.
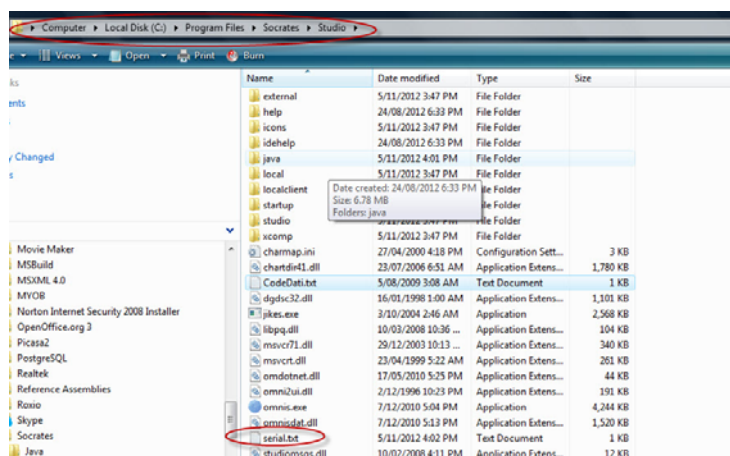
5) The folder contents will be as below:
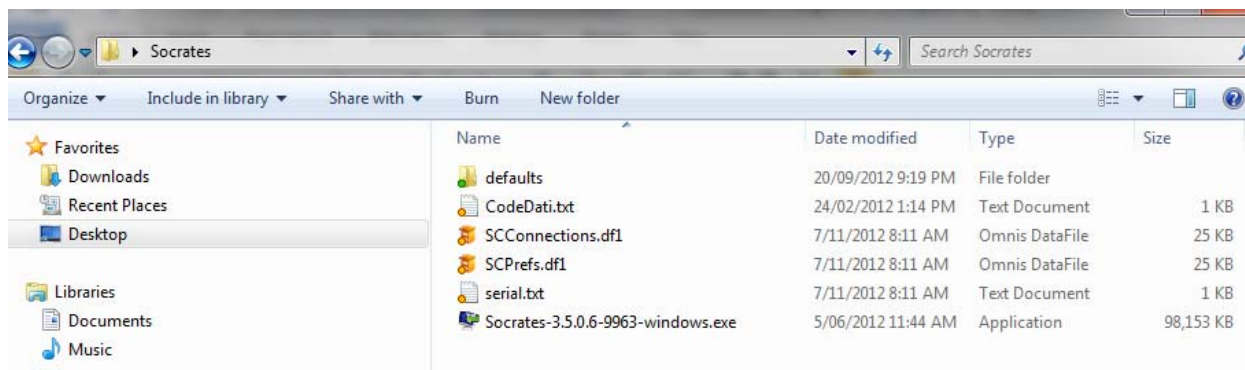
Copy the whole folder to the other workstations, and then double click on the .exe installer. Follow the prompts to finish the install. Once finished open from the new shortcut, and the client machine/s will open into the same database as the first machine.

6) Delete/uninstall all the old installations making sure you delete the shortcuts.

7) Check the Image and X-ray storage to make sure the new database is pointing to the correct location for the images if there are any.

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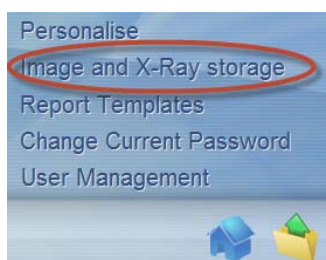
Then click on Change Image Storage folder, and browse to the folder where your images are located.
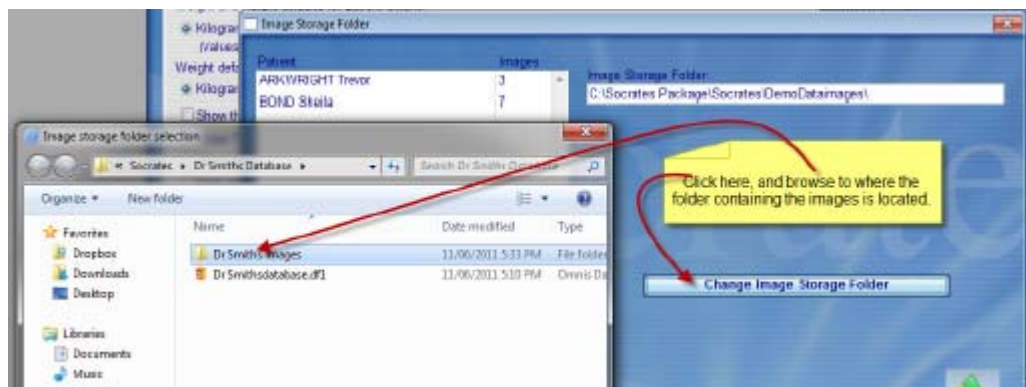
That's it for reinstalling and setting up or copying an existing database.

Extract Selection from Current Database

This is only available if you are currently logged into an existing Socrates database. You can't extract a sub set from a file if you are not logged into it, the function will be greyed out if you are not logged in.

This option will import data from all of the Template fields in your current database and will import some or all of the Patient / Surgery / Follow Up data depending on the options that you choose.

An Extract Section will appear on the screen with several options to choose from.

You may choose to:

- Click the Extract Selection button to choose a selection of data to extract.

- Copy Images or not.

- Anonymise Patient Key Identifiers.

See chapter on Set Up for more details about this function.

BACKING UP AND RESTORING POSTGRESQL DATABASES

This section covers various options of backing up and restoring individual PostgreSQL databases using the pgAdmin application.

PostgreSQL stores data within the data directory specified during the installation process. Each database is not stored as a single file but rather is spread across multiple files which are handled by the PostgreSQL database engine.

To copy a database from one postgres server to another requires the use of built in functions in the pgAdmin application.

Note: If a database is backed up from one version of PostgreSQL it cannot be restored into another version.

Backing up a Database

To back up a database you will need to browse to the database you wish to back up within pgAdmin.

Right click on the database and select Backup from the menu. Enter the directory and file name you wish to back the database up as or click the button to the right of the file name text box to browse for a backup file name.

The rest of the settings in the dialog can be left as default.

Click OK to back up the selected database. This process can take some time to complete for large databases.

Note: This will not back up any login roles associated with the database. If this database is restored into another PostgreSQL server and is to be used from Socrates this login role will need to be recreated and the owner reassigned.

Restoring a Database

To restore a database previously backed up from another PostgreSQL database server first a new database will need to be created in the target database server. From within pgAdmin, right-click on databases and select New Database.

This database will need to be named the same as the database that was backed up.

Select the newly created database, right-click on it and browse for the backup file using the button to the right of the file name text box. Select OK to begin the restore.

It is normal to receive the following error during the restore process:

pg_restore: [archiver (db)] Error while PROCESSING TOC:

pg_restore: [archiver (db)] Error from TOC entry 674; 2612 16386 PROCEDURAL LANGUAGE plpgsql

postgres

pg_restore: [archiver (db)] could not execute query: ERROR: language "plpgsql" already exists

Command was: CREATE PROCEDURAL LANGUAGE plpgsql;

This is not a problem and indicates that the plpgsql language is already installed and does not need to be restored from the database.

Once the restore is finished you may need to create a new login role and assign the owner of the database to that user. Otherwise the default owner of the database will be the postgres login role created during the PostgreSQL installation process.

RELOCATING YOUR IMAGE FOLDER

If you have a new computer and have a folder with X-rays or videos from your previous computer this needs to be moved to a new location also. Just use the copy and paste function and copy the whole folder to the new location. You will now need to re-establish a path to this folder from your new database or you won't be able to open any of the images. Even if your folder is in its original location on the server for example, you still have to "tell" the new or relocated database where the image folder is.

Start Socrates and log in, then click on the Set Up screen and select Image and X-ray storage.
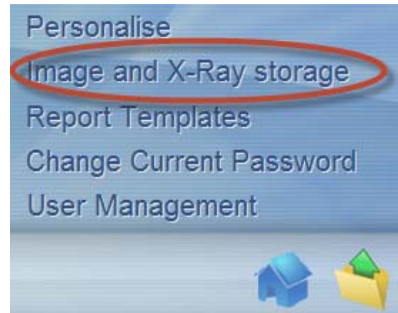
Then click on Change Image Storage folder, and browse to the folder where you images are located. You will now be able to import and store images in your new or relocated database.
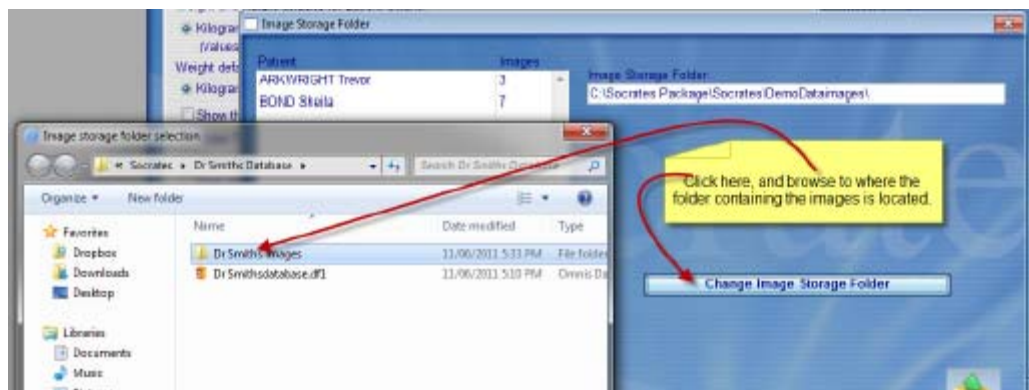
POSTGRES SUMMARY

1. Download postgres 9.0.8
   - Ensure you select 32 or 64 bit if using Windows
   - Enter a new postgres password, continue the install
   - Don't select stack builder

2. Open PostgreSQL > PGAdminIII in program files

3. Double click on Postgres 9.0.

4. Enter the postgres password you created before

5. Right click on Login Roles, Select New Login Role

6. Type in Role name 'socadminuser' and enter a new password

7. On role privileges tab, select Super User then click OK

8. Right click on database, select New Database

9. Name database 'socdbconnect', owner 'socadminuser'

10. If multiple installations, check page 12 "CONFIGURING CLIENT ACCESS USING PG_HBA.CONF"

11. Go to create new database in Socrates.

12. Go to manage server details on the local machine/s and change the socadmin password to the new one.

13. Make sure that the IP address range has been set for all client machines to allow access to PostgreSQL.

INSTALLING SOCRATES ON MULTIPLE WORKSTATIONS

Once you have installed and connected to the database it's possible to copy some files from this user into the installation folder for the other computers. This will save you having to register, and add the connection details on each machine.

See separate document for details.