



OpenEyes - Windows Server Setup

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Target Audience

General Interest	
Healthcare managers	
Ophthalmologists	
Developers	✓

Amendment Record

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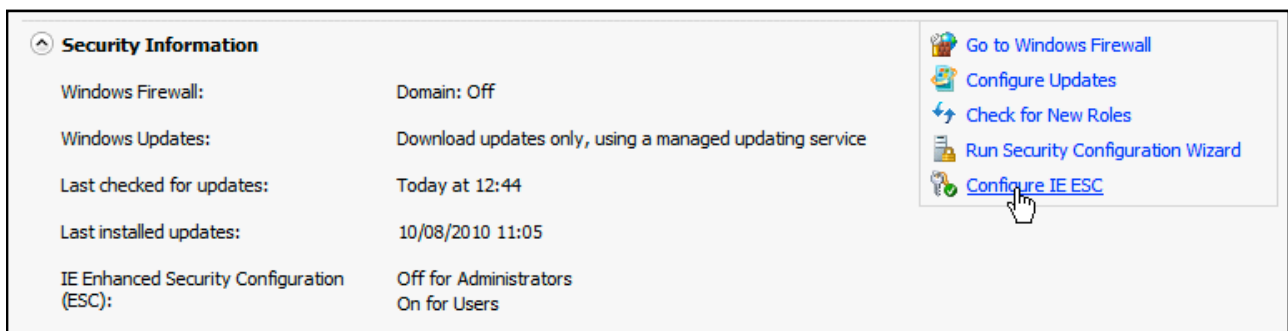
Introduction

This document gives details instructions for setting up a new installation of OpenEyes running on a windows server. The steps described in this document have been tested on Windows Server 2008 (R2).

Server settings

1. Turn off IE ESC

Run Server Manager, and ensure that IE Enhanced Security Configuration is turned off. You can turn it on again once the installation and setup is complete



2. Create Directory Structure

Decide which directory you want to host OpenEyes from (for example c:\served), and then create a subdirectory named openeyes, and subdirectories named 'htdocs', and 'logs' within it.

3. Add FTP role

In Server Manager, add a role of Web Server including FTP. If using Apache, uncheck all the IIS options, except IIS 6 Metabase compatibility and IIS management console. Examining the role services in Server Manager should look like this;

	Management Tools	Installed
	IIS Management Console	Installed
	IIS Management Scripts and Tools	Not installed
	Management Service	Not installed
	IIS 6 Management Compatibility	Installed
	IIS 6 Metabase Compatibility	Installed
	IIS 6 WMI Compatibility	Not installed
	IIS 6 Scripting Tools	Not installed
	IIS 6 Management Console	Not installed
	FTP Server	Installed
	FTP Service	Installed
	FTP Extensibility	Installed
	IIS Hostable Web Core	Not installed



4. Configure FTP

Now that FTP services are installed and running, run IIS Manager and select 'Sites' in the left hand panel, right-click and select 'Add FTP Site'. Give the site a name (eg OpenEyes) and navigate to the subdirectory where OpenEyes will be served from (eg c:\served). Keep the Binding IP address to 'All unassigned' and the port as 21. Select 'No SSL'. Add authentication data for a specified user as in the following panel;

The screenshot shows the 'Add FTP Site' dialog box with the 'Authentication and Authorization Information' tab selected. The dialog has a title bar with a question mark and close button. Below the title bar is a globe icon and the tab name. The main area is divided into three sections: Authentication, Authorization, and Permissions. In the Authentication section, 'Basic' is selected with a checked checkbox, while 'Anonymous' is unchecked. In the Authorization section, 'Allow access to:' is set to 'Specified users' in a dropdown menu, and a text box below it contains the username 'bill'. In the Permissions section, both 'Read' and 'Write' are selected with checked checkboxes. At the bottom of the dialog are four buttons: 'Previous', 'Next', 'Finish', and 'Cancel'.

Install Apache

1. Download the software

Currently the latest version is 2.2.16 which is available from <http://httpd.apache.org/download.cgi>. Choose the installer which includes OpenSSL (Win32 Binary including OpenSSL 0.9.8o (MSI Installer):

2. Install

Run the installer, and enter the server details as in the following screen shot, ensuring the 'run as a service' option is ticked: Change the destination folder to c:\apache rather than the default (On 64 bit servers, the default path has parentheses which can confuse some Apache paths.



Apache HTTP Server 2.2 - Installation Wizard

Server Information

Please enter your server's information.

Network Domain (e.g. somenet.com)
moorfields.nhs.uk

Server Name (e.g. www.somenet.com):
acos.moorfields.nhs.uk

Administrator's Email Address (e.g. webmaster@somenet.com):
bill.aylward@moorfields.nhs.uk

Install Apache HTTP Server 2.2 programs and shortcuts for:

☒ for All Users, on Port 80, as a Service -- Recommended.

☐ only for the Current User, on Port 8080, when started Manually.

InstallShield

< Back Next > Cancel

Accept all the other defaults, including the 'Typical installation' option.

3. Configure

Open the httpd.conf file in the conf of the Apache installation. Verify that that the DocumentRoot is configured to point to the location you chose for the openeyes directory (C:\served\openeyes\htdocs). The directory directive for this location should allow overrides:

AllowOverride All

Install OpenEyes

User FTP from your development environment to upload OpenEyes to the openeyes directory



Install PHP (Apache)

1. Download the software

Currently the latest version is 5.3.3 which is available from <http://windows.php.net/download/#php-5.3-ts-VC6-x86>. Use the VC6 version (thread safe) and choose the ZIP package.

2. Install (Apache)

Create a folder on your hard disk for PHP, for the purposes of this tutorial it is assumed it is called "c:\php". Unzip the contents of the download and place in this folder. Edit your httpd.conf file to include the following line (This is already present in the OpenEyes supplied httpd.conf);

```
LoadModule php5_module "c:/php/php5apache2_2.dll"
```

3. Configure

Copy the OpenEyes supplied php.ini file into c:/php and ensure httpd.conf contains the following line;

```
PHPIniDir "c:/php"
```

4. Test the installation

Copy the file info.php into the htdocs directory, and re-start Apache. Pointing the browser to this file should produce a page of PHP output similar to the following;



PHP Version 5.3.3



System	Windows NT MEHOO 6.1 build 7600 (Unknow Windows version Standard Edition) i586
Build Date	Jul 21 2010 20:00:47
Compiler	MSVC6 (Visual C++ 6.0)
Architecture	x86
Configure Command	cscript /nologo configure.js "--enable-snapshot-build" "--disable-isapi" "--enable-debug-pack" "--disable-isapi" "--without-mssql" "--without-pdo-mssql" "--without-pi3web" "--with-pdo-oci=D:\php-sdk\oracle\instantclient10\sdk,shared" "--with-oci8=D:\php-sdk\oracle\instantclient10\sdk,shared" "--with-oci8-11g=D:\php-sdk\oracle\instantclient11\sdk,shared" "--enable-object-out-dir=../obj/" "--enable-com-dotnet" "--with-mcrypt=static"
Server API	Apache 2.0 Handler
Virtual Directory Support	enabled
Configuration File (php.ini) Path	C:\Windows
Loaded Configuration File	C:\php\php.ini
Scan this dir for additional .ini files	(none)

5. Create a shortcut

The default path to 64bit Apache may create problems reading files, due to the parentheses around x86. These can be avoided by creating a shortcut called c:\apache which points to c:\Program Files (x86)\Apache Software Foundation.

The shortcut can then be used in place of the full path within configuration files (but not the ServerRoot directory, which requires a full path)

Install PHP (IIS)

1. Download the software

Currently the latest version is 5.3.3 which is available from <http://windows.php.net/download/#php-5.3-ts-VC6-x86>. Use the VC9 version (non-thread safe) and choose the MSI installer.

2. Install (IIS)

Run the installer, and in the 'Web server setup' section, choose IIS. Under 'Choose items to install', ensure you have all the SQL items checked according to your setup (e.g. Oracle extensions are not enabled by default)



PHP Extensions

To connect to Microsoft SQL server databases, follow the following steps

1. Download and install the Microsoft SQL Server 2008 native client

The file (sqlncli.msi) is currently available from this [link](#).

2. Download and install the PHP driver

The file (SQLServerDriverForPHP11.EXE) is currently available from this [link](#).

3. Make the driver available to PHP

Copy the php_sqlsrv_53_ts_vc6.dll driver into the the [installation folder]/php/ext path.

4. Modify php.ini

Edit the php.ini file to include the following line;

```
extension=php_sqlsrv_53_ts_vc6.dll
```

5. Restart apache

Setting up certificates

You may find it easier (if you have IIS installed) to use that to generate certificates. If so then it will be generated in .pfx format. To convert to the two files required by Apache, do the following

1. Add OpenSSL to the PATH

Find PATH under Start » Settings » Control Panel » System and Maintenance » System » Advanced system settings » Environment Variables » System variables » Path

and add the following to it (with a semicolon separator);

```
C:\openssl\bin
```

2. Create the certificate and private key

Create the certificate and private key and place in a convenient place (eg C:\certs)

3. Convert to Apache friendly format

```
► cd C:\certs
```

Export the private key file from the pfx file;

```
► openssl pkcs12 -in opentestssl.pfx -nocerts -out  
openeyestestkey.pem
```



The following command removes the passphrase from the private key so Apache won't prompt you for your passphrase when it starts;

```
▶ openssl rsa -in openeyestestkey.pem -out openeyestestserver.key
```

Export the certificate file from the pfx file

```
▶ openssl pkcs12 -in opentestssl.pfx -clcerts -nokeys -out  
openeyestestcert.pem
```

Installation

Download and install the latest version of the MySQL community server from the [download](#) section of the MySQL website. For a 64 bit server, choose the “Windows (x86, 64-bit), MSI Installer Essentials - Recommended” and select the ‘Typical’ installation. Accept all the other defaults, including ‘Configure MySQL now’

Configuration

In the configuration wizard, select ‘Standard Configuration’ and run it as a windows service, as well as adding the bin to the path (to allow command line control);



Initial setup

1. Turn off strict mode

Some migrations and database import processes require strict mode to be turned off. Locate the configuration file for the mysql installation, and find the *sql-mode* configuration entry:

```
sql-mode="STRICT_TRANS_TABLES,NO_AUTO_CREATE_USER,NO_ENGINE_SUBSTITUTION"
```

Either comment out this line, or remove "STRICT_TRANS_TABLES" from this setting. More information on this can be found here:

<http://dev.mysql.com/doc/refman/5.1/en/server-sql-mode.html>

2. Set admin password

A default installation has a blank default password, so the first step is to set up a strong admin password which will allow all privileges: 'Od7gH4x3jdf7'. Don't select the option allowing root access from remote machines.

3. Create test databases

Run mysql client by typing the following in the command line



```
▶ mysql -u root -p
```

This should connect with MySQL server and allow you to create the test databases using the following commands;

```
▶ CREATE DATABASE openeyestest;  
▶ CREATE DATABASE openeyesrbactest;
```

4. Grant privileges

Allow limited access to the databases for the user;

```
▶ GRANT SELECT, INSERT, UPDATE, DELETE ON openeyestest.* TO  
  'openeyestestuser'@'localhost' IDENTIFIED BY 'password';  
▶ GRANT SELECT, INSERT, UPDATE, DELETE ON openeyesrbactest.* TO  
  'openeyestestuser'@'localhost' IDENTIFIED BY 'password';
```

Allow full access to an administrator (the use of '%' allows remote access from any host, so use with caution);

```
▶ GRANT ALL PRIVILEGES ON openeyestest.* TO 'test.admin'@'%' IDEN-  
  TIFIED BY 'password';  
▶ GRANT ALL PRIVILEGES ON openeyesrbactest.* TO 'test.admin'@'%'  
  IDENTIFIED BY 'password';
```

5. Flush Privileges

```
▶ FLUSH PRIVILEGES;
```

6. Create live databases

```
▶ CREATE DATABASE openeyes;  
▶ CREATE DATABASE openeyesrbac;
```

7. Grant privileges

Allow limited access to the databases for the user;

```
▶ GRANT SELECT, INSERT, UPDATE, DELETE ON openeyes.* TO 'openeye-  
  suser'@'localhost' IDENTIFIED BY 'password';  
▶ GRANT SELECT, INSERT, UPDATE, DELETE ON openeyesrbac.* TO  
  'openeyesuser'@'localhost' IDENTIFIED BY 'password';
```



Allow full access to an administrator (the use of '%' allows remote access from any host, so use with caution). Only one password per user is recognised.

```
▶ GRANT ALL PRIVILEGES ON openeyes.* TO 'live.admin'@'%' IDENTIFIED BY 'password';
▶ GRANT ALL PRIVILEGES ON openeyesrbac.* TO 'live.admin'@'%' IDENTIFIED BY 'password';
```

8. Flush Privileges

```
▶ FLUSH PRIVILEGES;
```

9. Import data

Importing of data and additional setup can be done remotely using an admin tool, or locally by using commands such as the following;

```
▶ exit
▶ mysql -u root -p -h localhost -D openeyes -o < openeyes.sql
```

10. Check Privileges

The following command displays which users have access to the server

```
▶ SELECT User, Host, Password FROM mysql.user;
```

Ensure that all root users have a password;

```
mysql> SELECT User, Host, Password FROM mysql.user;
+-----+-----+-----+
| User          | Host      | Password                                     |
+-----+-----+-----+
| root          | localhost | *060FE40C34E16F2CDC7E5C18B44AB412ECC372A3 |
| openeyestestuser | localhost | *80C66217FE9C553B2C23649FFFD49622CEBD22E7 |
| test.admin    | %         | *61B33965E34FE20B08B626A4286756D1302B8BB5 |
| openeyesuser  | localhost | *1F9BDA17D29EAB13724EFE68BCDF203197D1956C |
| live.admin    | %         | *748E363CA4E4EC437380FCFE1303F902E22975F9 |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

The following command shows privileges for individual users;

```
▶ SHOW GRANTS FOR 'user'@'host';
```



Troubleshooting

Unable to connect to MySQL database

There is a but on the Windows platform which may prevent communication between PHP and MySQL producing errors of the form;

PHP Warning: mysqli::mysqli(): [2002] A connection attempt failed because the connected party did not (trying to connect via tcp://localhost:3306) in xxx.php on line x.

[PHP bug #45150](#) suggests that this is due to issues resolving localhost on Windows. This is partially correct, more specifically it's an issue with localhost resolving to ::1 when IPv6 is enabled.

To fix use 127.0.0.1 in your connection string instead of 'localhost';

Install OpenLdap

This installation is only required if you need the LDAP implementation of RBAC

1. Install software

OpenLDAP can be installed using a pre-compiled package available [here](#);

[OpenLDAP](#)

Download the package and install, accepting defaults, but adjusting the following screen as follows;



OpenLDAP for Windows Setup

Additional Settings
Customize the installation (optional)

Based on the operating system where you run this installation package the ports used for the OpenLDAP service can be specified below. The current values are just a proposal. Please configure the settings to meet your requirements.

IP Address, OpenLDAP Port, OpenLDAP SSL Port for the OpenLDAP service are:

Servername / IP Address:

OpenLDAP Port: OpenLDAP SSL Port:

☐ Activate Monitor Database

Back Next Cancel

Copy the oerbac.schema file into the ./schema directory within the installation directory (normally C:\Program Files\OpenLDAP)

2. Configure OpenLdap

Edit the default slapd.conf file using wordpad to make an editable configuration file; (you may need to move it out of the OpenLDAP directory, edit it, and move it back again.

Edit the include lines near the top of the configuration file to

```
include      ./schema/core.schema
include      ./schema/cosine.schema
include      ./schema/inetorgperson.schema
include      ./schema/oerbac.schema
```

(Copy the oerbac.schema file to this directory first before running)

Further down the file, under the BDB database definitions, edit the first three lines to refer to your domain, as follows;



database	bdb
suffix	"dc=openeyes,dc=com"
rootdn	"cn=Manager,dc=openeyes,dc=com"

Save the file.

3. Set the Berkeley database

Go to the OpenLdap data directory;

```
▶ cd /opt/local/var/openldap-data
```

Copy the example configuration file to an active one;

```
▶ sudo cp DB_CONFIG.example DB_CONFIG
```

4. Running OpenLdap

The following command will load OpenLDAP, and will also make use of launchd to ensure it runs at boot time.

```
▶ sudo launchctl load -w /Library/LaunchDaemons/  
org.macports.slapd.plist
```

There is a permissions [issue](#) which will mean that slapd will not run at boot time, even following this command.

To stop slapd, run the following command;

```
▶ sudo kill -INT `cat /opt/local/var/run/slapd.pid`
```

To start slapd;

```
▶ sudo /opt/local/libexec/slapd
```

5. Testing OpenLdap

Any LDAP browser can be used to communicate with OpenLDAP. The following instructions are for installing Apache Directory Studio.

Download and install the latest version of the Java runtime environment from the following link;

[Java Runtime Environment](#)

Download and install the free Apache Directory Studio from <http://directory.apache.org/studio/downloads.html>.

Run the software, and add a new connection called OpenLDAP with a hostname of 127.0.0.1, a port of 389, and no encryption. Accept simple authentication, and enter the Bind user should be set to the same as in your slapd.conf configuration file (cn=Manager,dc=openeyes,dc=com). Similarly the password. Accept the other



default authentication Method (simple authentication), and ignore any Java error messages. At this point, there will be nothing in the directory. See the OpenEyes-Access Control for details on how to import data.

Using your LDAP Browser to import the OpenEyes.ldif file which will create the full RBAC structure

Appendix

The text editors that ship for free with windows can be frustrating to use. We recommend downloading the excellent (and free) notepad++ which is available from <http://notepad-plus-plus.org/>