



Getting Started with SQL Anywhere and PHP

A whitepaper from Sybase iAnywhere

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**This whitepaper was written in the context of SQL Anywhere 11 and PHP 5.
However, its content may be applicable to previous and future releases.**

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Overview

This whitepaper provides an introduction to using PHP and SQL Anywhere to create web applications with rich dynamic content and functionality.

[PHP](#) is a popular server-side scripting language primarily for web development. The [PHP Manual](#) provides the following description:

PHP is an HTML-embedded scripting language. Much of its syntax is borrowed from C, Java and Perl with a couple of unique PHP-specific features thrown in. The goal of the language is to allow web developers to write dynamically generated pages quickly.

[SQL Anywhere](#) is a popular relational database management system. The [SQL Anywhere documentation](#) provides the following description:

SQL Anywhere is a comprehensive package that provides technologies for data management and enterprise data exchange, enabling the rapid development of database-powered applications for server, desktop, mobile, and remote office environments.

To successfully complete the procedures in this document, you must install the following software:

- **A Web Server** [Apache](#) and [IIS](#) are the most popular Web Servers (and the ones we use regularly), but any [Web Server](#) that supports PHP should work.
- **PHP** Install on the same computer as the Web Server.
- **SQL Anywhere** Install on the same computer as the Web Server. Alternatively, you can install SQL Anywhere on a separate computer and install the SQL Anywhere client software on the same computer as the Web Server and PHP.
- **The SQL Anywhere PHP extension** Copy to the PHP extensions directory and modify the PHP configuration file (`php.ini`) to load the extension. Your environment must be changed to allow the extension to load the SQL Anywhere client software.

Installing a Web Server and PHP

Apache is available for download at <http://httpd.apache.org>. PHP is available for download at <http://www.php.net>. You can also get Apache and PHP as part of distributions such as [XAMPP](#), [WampServer](#), [Linux packages](#), or some [Linux distributions](#). Many of these distributions install Apache and PHP pre-configured, making it possible to get Apache and PHP up and running quickly and requiring less setup than installing them separately.

IIS is installed by default on Windows Server 2003 and Windows Server 2008, and optionally installed on Windows XP Professional and Windows Vista. [PHP download](#) options include a Windows installer for PHP binaries. IIS is limited to Windows.

Detailed setup instructions for Web Servers and PHP are not included here. There are many resources on the Internet that explain how to set up Apache or IIS with PHP. You should accept the default installation options if you are unfamiliar with setting up a Web Server.

By default, your web site is a single root directory and subdirectories on your file system. Using IIS, the default root directory will be `c:\inetpub\wwwroot`. Using Apache, the root directory is controlled by the `DocumentRoot` configuration option. The default value for `DocumentRoot` varies between distributions and the location for setting `DocumentRoot` also varies (usually in a file named `httpd.conf`). Many distributions of Apache have a default webpage at <http://localhost> with a link to a `phpinfo()` page. Click this `phpinfo()` link and search for `DOCUMENT_ROOT` to determine the Apache `DocumentRoot` setting.

Running a PHP script is as simple as copying the PHP source file to a directory within your web site and then referencing the file in your browser. The Web Server will recognize the .php file extension and automatically use the PHP interpreter to generate HTML output for your browser. Try creating the following PHP script in the root directory of your local web site. Name the file `phpinfo.php`. Run this script by viewing <http://localhost/phpinfo.php> in your browser. Your Web Server needs to be running.

```
<html>
<body>
<?php
    phpinfo();
?>
</body>
</html>
```

You can also run PHP from the command line. This can be useful when troubleshooting. The command `php -i` will output the same PHP environment information as calling `phpinfo()` in a PHP script. The PHP executable needs to either be in your PATH or you will need a fully qualified filename for the PHP program.

Installing SQL Anywhere

The [SQL Anywhere Web Edition](#) is a free version of SQL Anywhere you can use to develop and deploy web applications. It is available for Windows, Linux, and Mac OS X operating systems. You will need to register to receive a license key by email. After receiving your license key, download SQL Anywhere and follow the installation instructions. Product documentation can be downloaded separately or you can use the [online documentation](#).

You should check for SQL Anywhere updates to make sure you have the most recent bug fixes. You will need to register to be able to download the bug fixes. To check for SQL Anywhere updates:

- On Windows, choose **Start > All Programs > SQL Anywhere 11 > Check for Updates**.
- On Linux with the GNOME desktop, choose **Applications > SQL Anywhere 11 > Check for Updates**.
- On all operating systems, open `updchk.html` in the support folder of your SQL Anywhere installation.

The SQL Anywhere PHP Extension Module

PHP extensions enhance PHP by making additional programming interfaces available to PHP programs. The SQL Anywhere PHP extension module provides a [PHP programming interface for SQL Anywhere](#). You can download the SQL Anywhere PHP extension from [here](#).

PHP extensions are implemented as shared libraries (DLLs on Windows). The naming convention for the SQL Anywhere PHP extension depends on the platform. There is a different extension module for each version of PHP. The PHP version is identified in the file name by `5.x.y`. If your version of PHP is more recent than the most recent SQL Anywhere PHP extension module, use the most recent SQL Anywhere PHP module. For example, you can use the SQL Anywhere extension for PHP 5.2.5 even though you are using PHP 5.2.6.

The name of the PHP extension on Linux and Solaris is `php-5.x.y_sqlanywhere[_r].so`. The name of the PHP extension on Mac OS X is `php-5.x.y_sqlanywhere[_r].dylib`. The threaded versions of the library are indicated by `_r`. You should use the threaded version unless you understand a reason why you need the unthreaded version. You must use the threaded version when PHP Thread Safety is enabled. You can use either version when PHP Thread Safety is disabled.

The name of the PHP extension on Windows is `php-5.x.y_sqlanywhere.dll`. The Windows extension is threaded.

Installing the PHP Module on Windows

1. Locate the PHP configuration file (`php.ini`). The best way to locate `php.ini` is by searching `phpinfo()` output for **php.ini** or for **Loaded Configuration File**. The location may be different when using PHP from the command line than when using PHP within Apache or IIS.
2. Edit `php.ini` using a text editor and search for **extension_dir**. This indicates a directory on the file system where PHP extension modules must be copied. If `extension_dir` is not set to a directory, create a new subdirectory in your PHP install and name it `extensions`, then modify `php.ini` to set `extension_dir` to the fully qualified name of the new directory.
3. [Download](#) and extract the SQL Anywhere PHP extension module. You should get a file named `php-5.x.y_sqlanywhere.dll`. Copy the file to the directory specified by the **extension_dir** entry in the `php.ini` file.
4. To load the SQL Anywhere PHP extension automatically whenever PHP starts, add one line to the **Dynamic Extensions** section of the `php.ini` file:
`extension=php-5.x.y_sqlanywhere.dll`
5. Modify your environment to allow the SQL Anywhere PHP extension to use libraries located within the SQL Anywhere installation. The `bin32` subdirectory of the SQL Anywhere installation must be in your PATH. You can modify the Windows PATH using the Control Panel. You can check PATH by looking in the **Environment** section of the `phpinfo()` output.
6. Restart your Web Server. You can check the status of the SQL Anywhere extension by searching for **sqlanywhere** in the `phpinfo()` output.

Installing the PHP Module on Linux, Mac OS X, or Solaris

1. Locate the PHP configuration file (`php.ini`). The best way to locate `php.ini` is by searching `phpinfo()` output for **php.ini** or for **Loaded Configuration File**. The location may be different when using PHP from the command line than when using PHP within Apache.
2. Edit `php.ini` using a text editor and search for **extension_dir**. This indicates a directory on the file system where PHP extension modules must be copied. If `extension_dir` is not set to a directory, create a new subdirectory in your PHP install and name it `extensions`, then modify `php.ini` to set `extensions_dir` to the fully qualified name of the new directory.
3. [Download](#) and extract the SQL Anywhere PHP extension module. You should get a file named `php-5.x.y_sqlanywhere_r.so`. Copy the file to the directory specified by the **extension_dir** entry in the `php.ini` file.
4. To load the SQL Anywhere PHP extension automatically whenever PHP starts, add one line to the **Dynamic Extensions** section of the `php.ini` file:
`extension=php-5.x.y_sqlanywhere_r.so`
5. Modify your environment to allow the SQL Anywhere PHP extension to use libraries located within the SQL Anywhere installation. The `lib32` or `lib64` subdirectory of the SQL Anywhere installation must be in `LD_LIBRARY_PATH`. You can modify `LD_LIBRARY_PATH` by changing the `envvars` file of your Apache installation. You can check `LD_LIBRARY_PATH` by looking in the **Environment** section of the `phpinfo()` output.

For example, add the following lines to `envvars` (using `sh`, `ksh`, or `bash`):

```
LD_LIBRARY_PATH="/opt/sqlanywhere11/lib32:$LD_LIBRARY_PATH"
export LD_LIBRARY_PATH
```

- Restart your Web Server. You can check the status of the SQL Anywhere extension by searching for **sqlanywhere** in the `phpinfo()` output.

Trying PHP with SQL Anywhere

Once the SQL Anywhere PHP extension module is running, you should try a PHP script that uses SQL Anywhere. Before you can do that, you need to create a SQL Anywhere database and have SQL Anywhere running. Open a command prompt and change the current directory to a place where you would like to create a SQL Anywhere database file. Once you are there, `dbinit` will create a database and `dsrv11` will start the SQL Anywhere server.

From the command line on Windows:

```
"\Program Files\SQL Anywhere 11\Bin32\dbinit" hits.db
"\Program Files\SQL Anywhere 11\Bin32\dsrv11" hits.db
```

From the command line on non-Windows platforms:

```
/opt/sqlanywhere/bin32s/dbinit hits.db
/opt/sqlanywhere/bin32s/dsdrv11 hits.db
```

You can also create databases and start servers using Sybase Central (a graphical tool). Please see the [product documentation](#) for details. The server can also run in the background as a service or daemon, but running the server from the command line keeps it straight forward to start.

Creating a new PHP file named `hits.php` in the root directory of your local web site. Cut and paste the following script as the contents of the new file:

```
<html>
<body>
<p>Record page hits</p>
<?php
    $conn = sasql_connect("uid=dba;pwd=sql");
    sasql_query($conn,
        "CREATE TABLE IF NOT EXISTS hits (hit TIMESTAMP)");
    sasql_query($conn,
        "INSERT INTO hits VALUES(now(*))");
    $result = sasql_query($conn,
        "SELECT TOP 10 hit FROM hits ORDER BY hit DESC");
    if ($result) {
        echo "<table border='1'>\n";
        while ($obj = sasql_fetch_object($result)) {
            echo "<tr>\n";
            echo "<td>$obj->hit</td>\n";
            echo "</tr>\n";
        }
        sasql_free_result($result);
        echo "</table>\n";
    }
    sasql_close($conn);
?>
</body></html>
```

Run the script by viewing <http://localhost/hits.php> in your browser. Your Web Server needs to be running. The first time the script runs, it will create a table called `hits` and insert one row. Each subsequent time the script runs, it will insert a new row in the table and output an HTML page showing the 10 most recent rows.

Troubleshooting

Please visit our online forum at [SQL Anywhere Web Development](#). You can ask questions and make comments about our software or about this white paper. We and other web developers can help you troubleshoot issues you might have.

Visit our newsgroups [sybase.public.sqlanywhere.general](#) and [sybase.public.sqlanywhere.linux](#). If you use a newsgroup reader, the newsgroups are available on forums.sybase.com.

Try restarting your Web Server. This can be useful when you have made configuration changes that seem to have no effect.

Try restarting your browser. Sometimes browsers are caching old information.

Review information in the `phpinfo()` output. This can be useful when you are having trouble determining why your PHP script is not working.

- Check your environment for SQL Anywhere in the path (`PATH` or `LD_LIBRARY_PATH`).
- Check the location of the loaded configuration file (`php.ini`). It can be in a different location running PHP from the command line.
- Check the location of web site files (`DOCUMENT_ROOT`).
- Check the status of the SQL Anywhere PHP extension (`sqlanywhere`).

Your PHP installation may have multiple files similar to `php.ini`. Make sure you are modifying the `php.ini` file listed in `phpinfo()`.

PHP has an error log you can configure in `php.ini` using the **`error_log`** directive. You can also configure the level of error reporting using the **`error_reporting`** directive.

Try PHP from the command line. This can be useful when you cannot get the SQL Anywhere extension to work inside your Web Server. It can make it easier to determine why it isn't working.

Remember to [check for updates](#) of SQL Anywhere in order to have the most recent bug fixes.

Download the most recent version of the SQL Anywhere PHP extension module. It is available from <http://www.sybase.com/detail?id=1019698>.