

Website Architecture

Technical Report

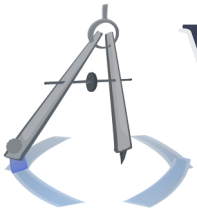
WAMSRv

Documentation for the server environment.

Michael Serritella

Summer 2010





Website Architecture

Technical Report | WAMSRv

I Intro to WAMSRv

The Website Architecture Server - WAMSRv - is a personal-computer environment with servers running Web software, which can be used to develop dynamic websites without need of 3rd-party services.

WAMSRv is designed for a Linux environment and is specifically tailored to an Ubuntu operating system.

2 Deployment

WAMSRv is setup by a shell script which installs programs and modifies the working environment. The setup script may theoretically be run within any Ubuntu-compatible environment, including Kubuntu and Xubuntu. Xubuntu is recommended due to its light use of resources.

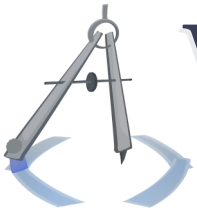
A pre-built WAMSRv is provided as a RAR file of a VMware image. The VMware image should be compatible with other virtual-machine software, such as VirtualBox, but if all else fails, the setup script may be run within an Ubuntu installation that is more easily under your control, such as a VirtualBox image.

3 Operating System

The pre-built WAMSRv has a few operating-system settings that you should know. It uses Xubuntu 9.04 (Jaunty). The username/password is **frank/tickleme**, and the root password is **tickleme**. The user's full name is given as **Frank Stallone**. The name of the computer (hostname) is **WAMSRv**.

The VMware settings allow for bridged networking, which uses the host machine's network connection as simply as possible. You may want to change settings within your virtual-machine software to disallow connections by default.





Website Architecture

Technical Report | WAMSRv

4 Feature List

WAMSRv installs the following software:

Apache Web server program; latest version within major version 2 is installed.

PHP Server-side scripting language; latest version within major version 5 is installed, both as an Apache module and as a command-line program.

PostgreSQL Professional-quality database management system server; latest version is installed.

pgAdmin III Administration program for PostgreSQL; latest version is installed.

phpPgAdmin Website-based administration program for PostgreSQL; latest version is installed.

MySQL Chinese-toy-quality database management system server; latest version is installed but unconfigured.

phpMyAdmin Website-based administration program for PostgreSQL; latest version is installed but unconfigured.

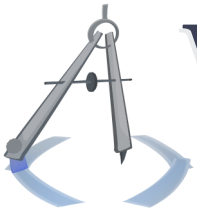
SQLite Embedded database management system; latest versions within major versions 2 and 3 are installed.

PDO modules Modules for PHP's fairly-recently-standardized database abstraction layer, with modules for PostgreSQL, MySQL, and SQLite 2 and 3.

WAMSRv has scripts for easy access to the above programs, and it includes them in the PATH environment variable so they may be accessed from any terminal. You may edit the setup script to change the directory of these scripts.

By default, all created files and folders, with the exception of package installations, will reside within the home directory of the user who executes the script.





Website Architecture

Technical Report | WAMSRv

5 Getting started with Apache

Look at the scripts in the scripts directory that have been created, so you get an idea of the basic capabilities.

5.1 Setup

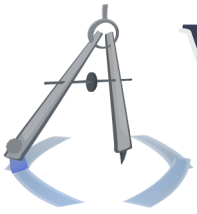
In order to simplify the setup process, the server setup script keeps the default server directory and then replaces the directory in the filesystem with a symlink to a directory which it creates; the created directory is within the executing user's home directory.

5.2 Configuration and use

Most of the site-specific settings can be written in the site's folders, like in an `.htaccess` file, though you will sometimes want to modify the central configuration files. These are in `/etc/apache2` and are intuitively named. You may want to edit these in order to experiment with port numbers or with limits on concurrent connections. You don't need to modify them most of the time.

In order to visit a site which is provided by Apache, you can go to the URI `http://localhost/somepage.html`. You can treat `localhost` as a substitute for any normal domain, such as `www.google.com`. The name "localhost" is an alias which you can edit in the "hosts file", which you can read about on the Internet and which you can find in `/etc/hosts`.





Website Architecture

Technical Report | WAMSRV

6 Getting started with PHP

PHP requires no significant setup and may be run from within the server or on the command line.

6.1 Setup notes

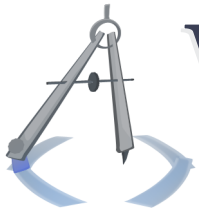
PHP may be installed on the server in two ways: As an Apache module and as a separate CGI program. The Apache module is very popular, and the server setup script uses this option. The other option is used on some Web hosts because of all the usual benefits of decoupling (in spite of all the usual drawbacks), such as security and reliability. The CGI option offers a few fewer functions, by which you could ask Apache to do things, like give you the HTTP headers directly or make additional (sub-)requests. The installation as an Apache module allows you to do these things.

6.2 Configuration and use

PHP can be invoked two ways - from within the Web server or on the command line. On the command line, simply use the binary `php [file]`. This second method is called the "CLI" method - Command-Line Interface.

These are two different executables, however, and they have different centralized configuration files. Like Apache, you don't usually need to modify the centralized files, but you may want to. They are located in `/etc/php5/apache2` and `/etc/php5/cli`, and the filename is `php.ini`.





Website Architecture

Technical Report | WAMSRv

7 Getting started with PostgreSQL

Look at the scripts in the scripts directory that have been created, so you get an idea of the basic capabilities.

If you have the virtual-machine image of the server, then you can already connect to the server, including via the GUI, and work easily. If not, you will need to read the setup instructions.

7.1 Setup

First, you will want to create a user. You might as well create a superuser first. Give it a password, and remember the password.

Now, you can do everything from a GUI, which will also show you the SQL commands it uses. So you might as well use the GUI and then take note of the equivalent SQL for future reference.

You will have to change one configuration file before you can connect via the command line and from within PHP. Using the superuser, edit the `pg_hba.conf` file within `/etc/postgresql/8.3/main`. Find the line towards the bottom that starts with "local" and ends with "ident sameuser" (or, if that isn't right, whatever ends with "ident sameuser"). Change that "ident sameuser" to "md5".

7.2 Administration

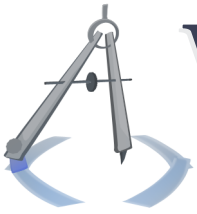
There is a GUI administration tool which is called `pgadmin3` and which has a script named `PostgreSQLAdmin`.

When you first connect, you can give the server whatever name you want; the server is a grouping of databases, so you are not yet naming a database.

For the host, enter "localhost". For the username and password, give the username you just created and the associated password.

If you want to use a website-based administration tool, you can use `phpPgAdmin`, which has an eponymous shortcut within the `PATH`.





Website Architecture

Technical Report | WAMSrv

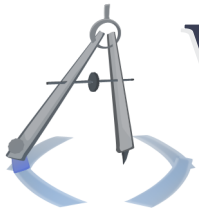
7.3 Connection and use

For any administrative tasks (pretty much anything but selecting/inserting/deleting data), you might as well use the GUI administration tool. You can even input SQL through its interface.

If you want to connect via the command line, you can use the script `PostgreSQL [databaseName] [userName]`.

If you are using the pre-built WAMSrv, a PostgreSQL user "WAM" has been created, which has the password "tickleme". You can connect to the "postgres" database at first, although you will want to leave that one alone and make your own database.





Website Architecture

Technical Report | WAMSRV

8 Getting started with SQLite

Look at the scripts in the scripts directory that have been created, so you get an idea of the basic capabilities.

SQLite requires no significant setup and has no persistent/global preferences, so there is not so much the concept of administration.

8.1 Use

The binary `sqlite3 [databasePath]` uses the newest version of SQLite and operates upon the database whose filesystem path is given in the argument. This also has a shortcut - the script `SQLite3`.

The binary `sqlite [databasePath]` uses the prior version of SQLite, version 2, and operates upon the database whose filesystem path is given in the argument. This has the shortcut `SQLite2` and `SQLite`.

You may want to change the `SQLite` script to point to `SQLite3`, but you should not forget that the two versions are completely incompatible, even in their database types, and that the rest of the world uses `sqlite` as the name for version 2.

