# HowTo

# for installing an

# “OAMP”-Server

# based on IBM OS/2 Warp 4.5 (MCP),

# Apache 2.2, MySQL 5.0 and PHP 5



05.11.2006, Version 0.7

# Preface

I would like to thank InnoTek and all others who worked
on the InnoTek GCC for OS/2 project that enabled the
OS/2 community to get a lot of great OpenSource Software
running on OS/2 using their port of the GCC compiler.

And I would like to especially thank Paul Smedley
who is investing a lot time into doing these ports
that enabled me to install a web server
based on mostly current OpenSource Software!

# 1 INTRODUCTION

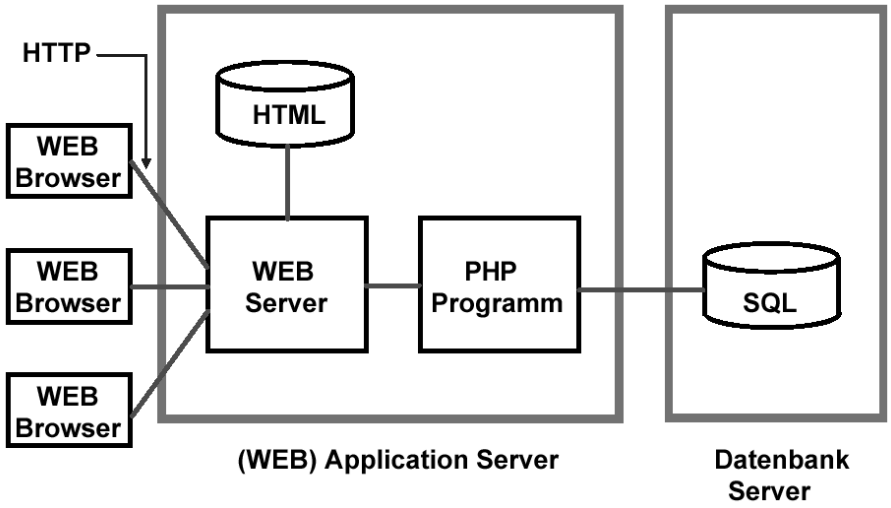
## 1.1 xAMP

The acronym 'xAMP' refers to a set of open source software that is used to run web servers that can deliver content statically or dynamically and a database server.

'x' stands for the operating system on which the servers are running, often Linux (LAMP), but also Mac OS X (MAMP), Windows (WAMP) and even OS/2 (OAMP, AMPOS2).

The 'A'pache is the web server itself, 'M'ySQL is the SQL database back-end and 'P'HP is the programming language to create dynamic content depending on user inputs and accessing the data on the database back-end.

The advantage of PHP is that it's a quite easy programming language available for a lot of platforms and with a good database connectivity.




Dynamic web server with PHP, source: Spruth 2004

# 2 OVERVIEW OF USED CONFIGURATION

## 2.1 System

| | |
|---|---|
| Hardware: | x86-Compatible PC, CPU >500MHz, RAM >256KB, HDD >1GB |
| OS: | IBM OS/2 Warp 4.52R (MCP2R), XRGC005 |
| Network: | Working TCP/IP-stack, broadband-internet-connection |

## 2.2 Software

- Prerequisites

  Copy GCC/LIBC-DLLs from libc-0.6.1-csd1 to LIBPATH (e.g. D:\OS2\DLL):

  - gcc335.dll
  - libc06.dll
  - libc061.dll

- Used Software

  Download the following packages from http://smedley.info/os2ports/:

  - httpd-2.2.3-os2-b3.zip
  - mysql-5.0.27-os2-b1.zip
  - php-5.2.0-os2-b1.zip

  Download phpMyAdmin from http://www.phpmyadmin.net/:

  - phpMyAdmin-2.9.0.2-all-languages.zip

  I recommend installing everything on a JFS-drive with a directory-structure like this:

  - for the binaries:

    E:\server\apache22

    E:\server\mysql5

    E:\server\php5
  - for the data:

    E:\data\htdocs

    E:\data\mysql

# 3 INSTALLING/CONFIGURING Apache 2.2 HTTPD

## 3.1 Installation of Apache 2.2

- Unzip the Apache-zip-archive with:
  ```
  unzip httpd-2.2.3-os2-b3.zip -d httpd-2.2.3-os2-b3
  ```
- Move the apache2 directory to your desired binary directory for Apache (e.g. E:\server\apache22).
- Get apache.ico and kill.exe from somewhere on the world and place it into the apache2 directory.
- Adjust paths in '`startup.cmd`' located in the apache2 directory.
- Create a '`shutdown.cmd`' like this in the apache2 directory:
  ```
  /* Rexx script to shut down Apache */
  pid = linein("logs\httpd.pid")
  'kill.exe -TERM 'pid
  ```
- Create desired program objects of the '`startup.cmd`' and '`shutdown.cmd`' and use apache.ico as symbol.

## 3.2 Configuration of Apache 2.2

- Copy httpd-std.conf to httpd.conf in the apache22 conf-directory, you also can use the httpd.conf.sample but there are missing some options.
- Adjust the httpd.conf (do NOT use the original E.EXE from Warp 3/4 for editing):
  - Replace /apache2/htdocs with your data-directory e.g. /data/htdocs and /apache2 with your binary directory e.g. /server/apache22
  - If using a non-OS/2-configuration file as base for your own httpd.conf change all LoadModule entries to the OS/2-dll-names, for example 'modules/mod_foo.so' has to be 'modules/foo.dll'.
  - Some basic configuration options (some option are missing in the httpd.conf.sample):
    ```
    ServerRoot "/server/apache22"
    ServerAdmin you@example.com
    ServerName www.example.com:80
    DocumentRoot "/data/htdocs"
    <Directory "/data/htdocs">
    Alias /icons/ "/server/apache22/icons/"
    ```

```
<Directory "/server/apache22/icons">
AliasMatch ^/manual(?:/(?:de|en|es|fr|ja|ko|ru))?(/.*)?$
                              "/server/apache22/manual$1"
<Directory "/server/apache22/manual">
ScriptAlias /cgi-bin/ "/server/apache22/cgi-bin/"
<Directory "/server/apache22/cgi-bin">
#    Alias /error/ "/server/apache22/error/"
#    <Directory "/server/apache22/error">
```

- Save httpd.conf and start the server with '`startup.cmd`', an OS/2 window should open and shows:

```
_____________________________________________
| Apache/2.2.3 (OS/2)
|
|
```

If not, you made a configuration error in the httpd.conf, change the startup.cmd object that it does not close the window after finishing the program and check the error messages!

- Copy the apache22-htdocs directory to your apache-data directory (e.g. E:\data\htdocs)
- Open your web browser and enter the IP address of your local machine, in your browser you should get:

```
_____________________________________________
| It works!
|
|
```

The basic web server is running now, stop it with '`shutdown.cmd`' for further configuration.

- Edit the httpd.conf and modify the following settings:
  - Adding support for additional/different start files (f.ex. index.htm):
    `DirectoryIndex index.html index.htm index.html.var index.php`
  - Adding support for password protected directories (optional):
    `AllowOverride All`
    `AccessFileName .htaccess`
    Additional changes:
    Create/modfiy .htgroups and .htusers and copy them into the Apache2-conf directory.
    Create/modify .htaccess and copy it into the HTML-directory's to be protected.

# 4 INSTALLING/CONFIGURING PHP 5 FOR USE WITH Apache 2.2

## 4.1 Installation of PHP 5.2

- Unzip the PHP5-zip archive with:
  ```
  unzip php-5.2.0-os2-b1.zip -d php-5.2.0-os2-b1
  ```
- Move the php5 directory to your desired binary directory for PHP5 (e.g. E:\server\php5).
- Copy php5.dll and apache2\modphp5.dll from your PHP5-bin directory to your apache2-modules directory (e.g. E:\server\apache22\modules).
- FIX for current PHP 5.1.5-os2-b1 (NOT needed for PHP 5.2.0):
  - Get modphp5fix.zip from http://smedley.info/modphp5fix.zip.
  - Copy libc062x.dll to a LIBPATH-directory (e.g. D:\OS2\DLL).
  - Copy fixed modphp5.dll to your apache2-modules directory.

## 4.2 Configuration of PHP 5.2

- Copy php.ini-recommended to your etc directory (e.g. D:\mptn\etc) and rename it to php.ini.
- Adjust the php.ini (do NOT use the original E.EXE from Warp 3/4 for editing):
  - Select modul directory:
    ```
    extension_dir = "E:/server/php5/modules"
    ```
  - Load the extensions that are available for OS/2:
    ```
    extension=bz2.dll
    extension=curl.dll
    extension=dbase.dll
    extension=exif.dll
    extension=gd.dll
    extension=gettext.dll
    extension=mbstring.dll
    extension=mysql.dll
    ;extension=mysqli.dll
    extension=openssl.dll
    ;extension=pdf.dll
    extension=pgsql.dll
    ```
  - Under OS/2 PHP 5.x doesn't recognize the timezone correctly, so set it in the php.ini:
    ```
    date.timezone = Europe/Berlin
    ```

    - For supporting the PDF creation with PHP (untestet):
        - Copy pdflib-php5.x-os2\pdf.dll to PHP5\modules.
        - Add '`extension=pdf.dll`' to php.ini.
- Adding support for PHP5 in Apache 2.2, add to httpd.conf:

```
LoadModule php5_module modules/modphp5.dll
DirectoryIndex index.html index.htm index.html.var index.php
AddType application/x-httpd-php .php
```

- Save php.ini and httpd.conf and start the http server with the '`startup.cmd`', an OS/2 window should open and shows:

```
_____________________________________________
| Apache/2.2.3 (OS/2) PHP/5.2.0
|
|
```

If not, you made a configuration error in the php.ini or httpd.conf, change the startup.cmd object that it does not close the window after finishing the program and check the error messages!

- Create a phpinfo.php in your apache-data directory (e.g. E:\data\htdocs):

```
<?php
echo 'Current PHP version: ' . phpversion();
echo
// Show all information, defaults to INFO_ALL
phpinfo();
?>
```

- Open your web-browser, enter the IP address/hostname of your local machine and point to phpinfo.php, in your web browser you should get s.th. like this:

```
_____________________________________________
| Current PHP version: 5.2.0
|
|       PHP version: 5.2.0                PHP
|       System         OS/2 mypcname 1 2.45 i386
|       Build Date     Nov 5 2006 17:12:39
|       ...
```

The web-server with PHP5 is running now, stop it with the '`shutdown.cmd`' for further configuration.

# 5 INSTALLING/CONFIGURING MySQL 5.0 FOR USE WITH Apache 2.2/PHP5

## 5.1 Installation of MySQL 5.0

- Unzip the MySQL5-zip archive with:
  `unzip mysql-5.0.27-os2-b1.zip -d mysql-5.0.27-os2-b1`
- Move the mysql5 directory to your desired binary directory for MySQL5 (e.g. E:\server\mysql5).
- Copy libc062x.dll from the mysql5-directory to a LIBPATH directory (e.g. D:\OS2\DLL).
- Get the MySQL icons from somewhere on the world, create an icons-directory in the MySQL-bin directory and place them into this directory.
- Create desired program objects of the MySQL executables and use the symbols in the icon directory.
- Creating the initial databases:
  - Use the included Zip-file (V5.0.26):
    - Unzip the data zip archive with:
      `unzip mysql5_sample_database.zip -d mysql5_sample_database`
    - Move the data directory to your MySQL data directory (e.g., E:\data\mysql\data).

    If you are using this database from 5.0.26 you probably want to delete the entry's of Pauls server later with:
    `mysql> DELETE FROM user WHERE Host='mail.smedley.info';`
  - Get them from the Windows-install-zip file :-( (prior Version 5.0.26):
    - Download the mysql-noinstall-5.0.2x-win32.zip from http://www.mysql.org/downloads/mysql/5.0.html
    - Unzip archive to a temporary directory.
    - Get the my-xxx.ini files, rename them to my-xxx.cnf and store them somewhere as reference.
    - Get the data directory and copy it to your MySQL-data directory (e.g. E:\data\mysql\data).
    - Delete the Windows-stuff :-)
  - Create them with the mysql_install_db-script (never tried it, see readme.os2 of Paul's MySQL-zip-file). you need a working sh.exe and sed.exe to use the script!
    Note that eCS 1.2 comes with an incompatible sed.exe in \ecs\bin on the boot drive! Rename it before running the script.

## 5.2 Configuration of MySQL 5.0

- Create/Modify MySQL-config file:
  - Create a my.cnf in your etc directory (e.g. D:\mptn\etc):

```
[client]
compress
user=root
[mysqld]
user=mysql
#preload-client-dll
basedir=e:/server/mysql5
datadir=e:/data/mysql5/data
skip-innodb #deactivate innodb
```

- Start MySQL, set admin password, test MySQL:
  - Open an OS/2 window and go to the MySQL-bin directory.
  - Start the MySQL-database server with '`mysqld.exe --console`', it should show:

```
_____________________________________________
| UNIX Socket is \socket\MySQL
| 060914 16:32:48 [Note] mysqld.exe: ready for connections.
| Version: '5.0.27'  socket: '\socket\MySQL'  port: 3306  Source distribution
|
```

  - Open a second OS/2 window, go to the MySQL-bin directory and enter the following commands to check if MySQL basicly runs:
  - Version-info: '`mysqladmin version`'

```
_____________________________________________
| mysqladmin  Ver 8.41 Distrib 5.0.26, for pc-os2-emx on i386
| Copyright (C) 2000 MySQL AB & MySQL Finland AB & TCX DataKonsult AB
| This software comes with ABSOLUTELY NO WARRANTY. This is free software,
| and you are welcome to modify and redistribute it under the GPL license
|
| Server version          5.0.27
| Protocol version        10
| Connection              Localhost via UNIX socket
| UNIX socket             \socket\MySQL
| Uptime:                 6 min 42 sec
|
| Threads: 1  Questions: 25  Slow queries: 0  Opens: 23  Flush tables: 1  Open
| les: 17  Queries per second avg: 0.062
```

- Settings of MySQL: '`mysqladmin variables`':

```
_____________________________________________
| +--------------------------------
+-------------------------------------------------+
| | Variable_name                 | Value     |
| +--------------------------------
+-------------------------------------------------+
| | auto_increment_increment      | 1
...
| | basedir                       | E:/server/mysql5\
...
| | datadir                       | e:\data\mysql5\data\
...
| | old_passwords                 | OFF
...
```

- Show the databases '`mysqlshow`':

```
_____________________________________________
| +--------------------+
| |     Databases      |
| +--------------------+
| | information_schema |
| | mysql              |
| | test               |
| +--------------------+
|
```

- Show the mysql-database '`mysqlshow mysql`':

```
_____________________________________________
| Database: mysql
| +---------------------------+
| |          Tables           |
| +---------------------------+
| | columns_priv              |
| | db                        |
| | func                      |
| | help_category             |
| | help_keyword              |
| | help_relation             |
| | help_topic                |
| | host                      |
...
| | user                      |
```

- Open a MySQL command line and optional delete the existing root user without password, set the password for the MySQL server admin:

```
mysql mysql
mysql> DELETE FROM user WHERE Host='localhost' AND User='';
       -> Query OK, 1 row affected (0.38 sec)
mysql> quit
       -> Bye
mysqladmin -u root password verysecretpassword
```

- Check the MySQL server again, with '`mysqlshow`' you should get now:

```
_____________________________________________
| mysqlshow: Access denied for user 'root'@'localhost' (using password: NO)
|
```

- Try the commands above again with user and password:

```
mysqladmin -u root --password=verysecretpassword version
mysqladmin -u root --password=verysecretpassword variables
mysqlshow -u root --password=verysecretpassword
mysqlshow -u root --password=verysecretpassword mysql
mysql -u root --password=verysecretpassword -e "select host,db,user
from db" mysql
```

  The output should be more or less the same as in the example before.

- The basic MySQL database server is running now!

# 6 INSTALLING/CONFIGURING phpMyAdmin 2.9 FOR SERVER-TEST

## 6.1 Installation of phpMyAdmin 2.9

- Unzip the phpMyAdmin zip-archive with:
  ```
  unzip phpMyAdmin-2.9.0.2.zip -d phpMyAdmin-2.9.0.2
  ```
- Move the phpMyAdmin-2.9.0.2-all-languages directory to your apache-data directory (e.g. E:\data\htdocs) and rename it to phpMyAdmin-2.9.0.2.

## 6.2 Configuration of phpMyAdmin 2.9

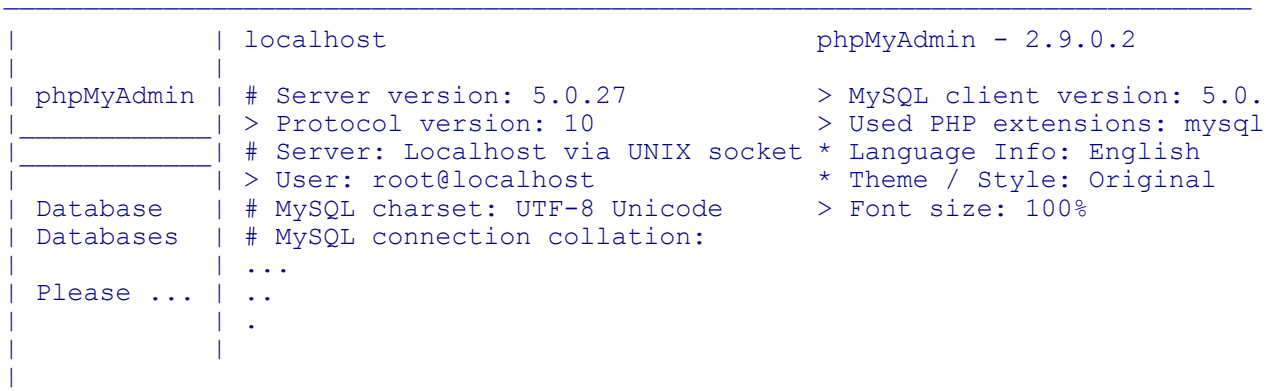
- Create a 'config.inc.php' in the phpMyAdmin directory:

```
<?php
/* Servers configuration */
$i = 0;
/* Server localhost (config:root) [1] */
$i++;
$cfg['Servers'][$i]['host'] = 'localhost';
$cfg['Servers'][$i]['extension'] = 'mysql';
$cfg['Servers'][$i]['connect_type'] = 'tcp';
$cfg['Servers'][$i]['compress'] = false;
$cfg['Servers'][$i]['auth_type'] = 'config';
$cfg['Servers'][$i]['user'] = 'root';
$cfg['Servers'][$i]['password'] = 'verysecretpassword';
/* End of servers configuration */
?>
```

Do NOT use this configuration in an environment outside of your private network, it's highly INSECURE - everybody can access your database without password!
If you need some security either use Apaches htaccess to secure the phpMyAdmin directory or change the 'config.inc.php' as follows:

```
$cfg['Servers'][$i]['auth_type'] = 'http';
$cfg['Servers'][$i]['user'] = 'root';
$cfg['Servers'][$i]['password'] = '';
```

- Open your web browser, enter the IP address/hostname of your local machine and point to the phpMyAdmin-2.9.0.2 directory, in your web browser you should get some thing like this:




Now you have a working OS/2-Apache-MySQL-PHP server!

# 7 CONCLUSION

- The server is running on OS/2 now, some advantages are:
  - You don't need other systems than OS/2 on your servers just because you need a web server environment.
  - You can use your laptop running OS/2 for the development of web-applications.
  - It's more secure by obscurity because nobody knows OS/2 and has the ability to hack the base OS!

- There are disadvantages too:
  - Stability and performance is not tested on higher loads, so the server probably is only for small environments!
  - We have very little development and porting resources for the OS/2 versions, so the ports generally don't support OS/2 specific things and the OS/2 versions often are not on the same level as the Linux versions.

# 8 LINKS

- Web-sites:
  http://smedley.info/os2ports/
  http://www.innotek.de/products.html
  ftp://ftp.netlabs.org/pub/gcc/
  http://www.ampos2.de/
  http://os4you.org/typo3goesos2de.html
  http://httpd.apache.org/
  http://www.mysql.org/
  http://www.php.net/
  http://www.phpmyadmin.net/

- Mailing-lists/Newsgroups:
  http://tech.dir.groups.yahoo.com/group/mysql-os2/

- My documentation, prepared OAMP-package:
  http://www.godacon.de/download/OAMP-Pres_V07.zip
  http://www.godacon.de/download/OAMP-HowTo_V07.zip
  http://www.godacon.de/download/OAMP-Pack_V07.zip
  http://www.godacon.de/download/OAMP-Conf_V07.zip

... and much other OS/2- and Linux-related stuff!