APACHE - 2
WEB SERVER

Exercises

(English)

Apache in One week (SuSE 9.2)

- **What is Apache** (thttpd, MSInformation Server, Netscape, AOL Server etc.)
- **History** of Apache name.
- **Browsers** (MSIE,Mozilla,Opera,Firefox,Netscape,Konqueror,Galeon, lynx, w3m)
- **HTTP Protocol format,** URI,URL (Browser Request content)
- **Install Apache** in SuSE
  `apache2, apache2-doc, apache2-mod_php4, apache2-prefork,`
  `apache2-example-pages` (package: `libapr0` is also installed as dependency)
- **Preparation to Exercises:**
    - Login as root and create the directory `/www`
    - Change in `/etc/sysconfig/apache2`
        `APACHE_SERVERNAME="laptop.linux.site"`
    - Create the empty file `/etc/apache2/conf.d/user.conf`
        - Alternative: Change in `/etc/sysconfig/apache2`:
            `APACHE_CONF_INCLUDE_FILES="/etc/apache2/user.conf"`
                and create a empty config file: `/etc/apache2/user.conf`
    - Transfer and install `Opera` , `w3m` and `lynx` from CD
    - Create Multiple root terminals for:

⇒ `vi /etc/apache2/conf.d/user.conf`	Title: **USER.CONF**
⇒ `rcapache2 reload`	Title: **RELOAD/RESTART**
⇒ `tail -f /var/log/apache2/error_log`	Title: **APACHE FEHLER**
⇒ `watch -n1 "ps -fC httpd2-prefork"`	Title: **WATCH_APACHE**
⇒ `mc / /srv/www/htdocs`	Title: **ROOT-MC**
⇒ `less /etc/apache2/default-server.conf`	Title: **DEFAULTS**
⇒	Title: **ROOT-BEFEHLE**

- **Start/Stop** of Apache (`rcapache2, /etc/init.d/apache2, insserv apache2`)
- **First Exercise with HTTP Protocol:** `telnet localhost 80` (GET /)
- **Where is what** (basic only)
    - Main server `/usr/sbin/httpd2-prefork` (Behaves like older Apache 1.3)
        or `/usr/sbin/httpd2-worker` (`apache2-mod_php4` doesn't work!)
    - Main Configuration file `/etc/apache2/httpd.conf`
    - Modules   `/usr/lib/apache2/`*`xxxx`*`.so`
    - Log files   `/var/log/apache2/`*`xxxx`*`_log`
    - Main Home pages   `/srv/www/htdocs/`

- **Configuration files conditions**
    - `httpd.conf` ...etc, <u>NO unrecognized directives allowed</u>

- **System access rights for:** User **`wwwrun`** Group **`www`**

- **Modules** : Roles and their Directives (**`server-info`**)
    - Change in `/etc/sysconfig/apache2`:
                `APACHE_MODULES="..... status info"`
                `APACHE_EXTENDED_STATUS="on"`
    - `rcapache2 restart`
    - In browser: `http://localhost/server-info/`

- **Apache Server status**: `http://localhost/server-status/`
  Documentation: `http://localhost/manual/`

- **Where are the docs:** `/usr/share/apache2/manual` (SuSE9.0/9.1-apache2-doc)

- **Important core directives:**
        In `/etc/apache2/default-server.conf`
            `DocumentRoot /srv/www/htdocs`
        In `/etc/apache2/httpd.conf`
            `DirectoryIndex index.html` (~ line 163)
        In `/etc/apache2/uid.conf`
            `User wwwrun`
            `Group www`

------------------------------------**Practical Exercises**--

- **Students put their names** in the `index.html.de`
  - In browser: `http://localhost/`

------------- **ALIAS** -------------
Example together:
in `user.conf`:   `alias /webicons/  /usr/share/apache2/icons/`
in `browser`:   `http://localhost/webicons/`
Exercise to do:
in user.conf: `alias /software/  /usr/share/doc/packages/`
                 `alias /web/  /www/`
in browser: `http://localhost/software/`
                     Result: *ERROR 403 Access forbidden*
in `user.conf`:   `<Directory /usr/share/doc/packages>`
                     `Allow from all`
                     `Options +Indexes`
                 `</Directory>`

                 `<Directory /www>`
                     `Allow from all`
                     `Options +Indexes`
                 `</Directory>`
in browser: `http://localhost/software/`
                 `http://localhost/web/`

------- **Containers** ------
`<Directory>`Absolute system path of web documents.

`<Location>` Relative path to `DocumentRoot` of server (read last after Dir. and Files)

`<Files>`   Can be nested inside `<Directory>` or alone (Declares defaults for server)
       Note: `<Files>` cannot be nested in `<Location>`. Use another `<Location>` for files.
            eg. `<Location /usr/local/myprogs/readme.html>`

`<Limit>`   Can be anywhere. Used to limit the use of certain HTTP methods

-----**Options FollowSymlinks** -------

Example together:
In Bash:

```
ln -s /home/[username]/Documents /srv/www/htdocs/userdocs
```

in browser: `http://localhost/userdocs/`   Forbidden!

in user.conf: `<Directory /srv/www/htdocs/>`
             `Options +FollowSymlinks +Indexes`
          `</Directory>`
in browser: `http://localhost/userdocs/`   Allowed!

Note: `FollowSymlinks` Does not work inside a `<Location>` block

DirectoryIndex
Exercise 1 to do:
In Bash: `ln -s /usr/share/doc/packages/bash /srv/www/htdocs/bash`

in `user.conf`:   `<Directory /srv/www/htdocs/bash>`
             `DirectoryIndex bashref.html`
          `</Directory>`

in browser: `http://localhost/bash/`

Exercise 2 to do (if needed):
Note: make sure `w3m` and `lynx` are installed

Commands to create the symbolic links:
```
ln -s /usr/share/doc/packages/w3m              /srv/www/htdocs/w3m
ln -s /usr/share/doc/packages/lynx/lynx_help /srv/www/htdocs/lynx
```

in `user.conf`:   `<Directory /srv/www/htdocs/w3m>`
             `DirectoryIndex w3mhelp.html`
          `</Directory>`

          `<Directory /srv/www/htdocs/lynx>`
             `DirectoryIndex Lynx_users_guide.html`
          `</Directory>`

------- **Allow - Deny**-----------

Example1 together (deny access to a single file):

```
in user.conf:     alias /etc/ /etc/
                  <Directory /etc>
                        Options +Indexes
                        order allow,deny
                        allow from all
                        deny from localhost hgü[dozent_host]
                        <Files fstab>
                            deny from all
                        </Files>
                        <FilesMatch ".*\.conf">
                            order deny,allow
                            deny from all
                            allow from localhost
                        </FilesMatch>
                  </Directory>
```

in browser:	`http://localhost/etc/`	Allowed!
From Students:	`http://localhost/etc/fstab`	Not Allowed
	`http://localhost/etc/`	

Only Dozent is not allowed: `http://[studenthost]/etc`

Example 2 together:
Allow access to a full directory(location): `/cups/ to 4 consecutive addresses`

```
in user.conf: alias /cups/  /usr/share/doc/packages/cups/de/
              <Location /cups>
                    order deny,allow
                    deny from all
                    allow from 192.168.71.12/30
              </Location>
```

in browser: `http://localhost/cups/`   Not Allowed!

Only Clients Hosts having the address 192.168.71.12 to 192.168.71.15 are allowed .
to the address: `http://[studenthost]/cups/`

Exercise 1 to do: Allow access to `/sambahelp`   only to this class
and have a specific page come up (DirectoryIndex) : `smb.conf.5.html`

```
In user.conf:     alias /sambahelp/  /usr/share/samba/swat/help/
                  <Location /sambahelp>
                        order deny,allow
                        deny from all
                        allow from 192.168.71.0/27 localhost
                        DirectoryIndex smb.conf.5.html
                  </Location>
```

Only Clients Hosts having the address 192.168.71.0 to 192.168.71.31 are allowed .
to the address: `http://[studenthost]/sambahelp/`

---------- **Public_html**---------

Example together:

```
In bash: cp -R /usr/share/doc/packages/htdig/htdoc/* \
                /home/[userlogin]/public_html


in browser: http://localhost/~[userlogin]
```

--------- **Authentication** --------.

Example together: Authenticate /~user1/ directory.(/home/user1/public_html)

In user.conf：

```
          <Location /~user1>
              allow from all
              AuthType Basic
              AuthName "Private Web Page"
              AuthUserFile   /etc/apache2/.okusers
              Require valid-user
          </Location>
```

in bash: touch /etc/apache2/.okusers
              htpasswd2 /etc/apache2/.okusers user1
in browser: http://localhost/~user1/

Exercise 2

In user.conf: alias /doc/ /usr/share/doc/

```
          <Location /doc>
              Options +Indexes
              order deny,allow
              allow from all
              AuthType Basic
              AuthName "Private DOCS"
              AuthUserFile   /etc/apache2/.okusers
            # AuthGroupFile  /etc/apache2/.okgroups
              Require valid-user
            # Require user jennie otto
            # Require group buero admin
              Satisfy any
            # Satisfy all
          </Location>
```

in bash: htpasswd2 -c /etc/apache2/.okusers jennie
              htpasswd2 /etc/apache2/.okusers paul
              htpasswd2 /etc/apache2/.okusers marie
              htpasswd2 /etc/apache2/.okusers hans
              htpasswd2 /etc/apache2/.okusers otto
              echo"admin: hans otto"   >> /etc/apache2/.okgroups
              echo"buero: jennie marie"   >> /etc/apache2/.okgroups
              echo"dienst: paul hans"   >> /etc/apache2/.okgroups

in browser: http://localhost/doc/

--------**INDEXES** ---------

<u>Note:</u> - Index Directives don't work inside `<Location>` container. Use `<Directory>`
        - Alias path can also be controlled by `<Directory>` using the real system Path.

Example 1 together:
Copy the whole directory from the Dozent computer `linuxbuch` to `/www/linuxbuch`.

<u>In</u> **`user.conf`**:

```
alias /linuxbuch/ /www/linuxbuch/
<Directory /www/linuxbuch>
      Options +Indexes
      DirectoryIndex dummy
      AddDescription "PDF Datei" .pdf
      AddDescription "<Font color=red>GIF Bilder</Font>" .gif
      AddDescription "<Font color=green>=START=</Font> online.html
```
----- **Extended Index Features** -------------------------
```
      IndexOptions    +FancyIndexing              \
                      +FoldersFirst               \
                      +IconsAreLinks              \
                      +SuppressSize               \
                      +SuppressLastModified       \
                      +NameWidth=*                \
                      +DescriptionWidth=*         \
                      +ScanHTMLTitles
      HeaderName header.html
      ReadmeName footer.html
      IndexIgnore header.html footer.html *.txt *.log
</Directory>
```

Note: The `'\'` at the end of each line above simulate a long line. They should never
     have anything else than *<Enter>* after it. No space or tabs or anything.

`header.html`

```
<HTML>
      <BODY background="green_paper.gif">
        <!-- KOMENTARE SIND HIER -->
        <H1><FONT color=red><CENTER> L I N U X - B U C H <BR>
        Inhalt</CENTER></FONT></H1>
        <IMG src=penguin.gif>
        <H3><FONT color=blue>Letzte Liste von LinuxBu.ch Dateien
        </FONT></H3>
        <BR>
        <HR><HR><HR>
      </BODY>
</HTML>
```

`footer.html`

```
<B><I>Bitte schreiben Sie Ihre Kommentare durch email:
<a href="mailto:michel@linuxint.com">michel@linuxint.com
</a></I></B>
```

Example 2 together: (Fill-up Descriptions automatically from HTML files titels)
in user.conf:

```
alias        /howto-de/      /usr/share/doc/howto/de/html/
<Directory /usr/share/doc/howto/de/html>
      Options +Indexes
      DirectoryIndex dummy
      IndexOptions    +FancyIndexing              \
                      +FolderFirst                \
                      +IconsAreLinks              \
                      +SuppressSize               \
                      +SuppressLastModified       \
                      +NameWidth=*                \
                      +DescriptionWidth=*         \
                      +ScanHTMLTitles
</Directory>
```

in Browser: `http://localhost/howto-de/`

----------------- **Virtual Hosts** --------------------------
Create the Virtual Host's ROOT directory and its log files Directory:

```
    mkdir /www/virtual1.de
    mkdir /var/log/apache2/www.virtual1.de/
```

● Enter `www.virtual1.de  virtual1.de  virtual1` in `/etc/hosts`
eg. `echo "$(hostname -i) www.virtual1.de virtual1.de virtual1" \`
```
    >> /etc/hosts
```

● Fill in the Virtual host with home pages:
```
  cp -v /usr/share/doc/packages/rpm/RPM-Tips/* /www/virtual1.de/
```

● in user.conf
```
NameVirtualHost 192.168.71.27
<VirtualHost 192.168.71.27>
      ServerName www.virtual1.de
      ServerAlias virtual1.de virtual1
      DocumentRoot /www/virtual1.de
      TransferLog /var/log/apache2/www.virtual1.de/access_log
      ErrorLog /var/log/apache2/www.virtual1.de/error_log
      <Directory /www/virtual1.de>
            Allow from all
            DirectoryIndex RPM-Tips.html
            # Place extra directives here for this directory
      </Directory>
</VirtualHost>
```

Make sure to set the NoProxy for `www.virtual1.de virtual1.de virtual1`

--------------- **Verify that the PHP module works** -----------------
1) Create a test php file in current DocumentRoot.
```
      echo "<?php"    >/srv/www/htdocs/phptest.php
      echo "<info()" >/srv/www/htdocs/phptest.php
      echo "?>"       >/srv/www/htdocs/phptest.php
```

2) In Browser:
```
      http://localhost/phptest.php
```

Should give a full home page on the configuration of the PHP module.

------------- **AllowOverride**-------------
Directives: `AccessFileName .htaccess`
Example 1 together:
(Note: valid only in `<Directory>` and NOT in `<Location>`)

In bash:
```
mkdir /srv/www/htdocs/override/
cp /srv/www/htdocs/bash/bashref.html /srv/www/htdocs/override/
```

In browser: `http://localhost/override/`   File is shown in index

in user.conf:
```
        <Directory /srv/www/htdocs/override>
             AllowOverride Indexes
        </Directory>
```

In bash: `touch  /www/override/.htaccess`
            `vi  /www/override/.htaccess`

            In .htaccess: `DirectoryIndex bashref.html`

In browser: `http://localhost/override/`   Bash page comes up.

-------------------- **CGI** --------------------------------
In bash: `mkdir /www/cgitest`
            `echo "192.168.10.50  www.cgitest.net" >> /etc/hosts`

In user.conf:

```
NameVirtualHost 192.168.10.50
<VirtualHost 192.168.10.50>
    ServerName www.cgitest.net
    DocumentRoot /www/cgitest
    TransferLog /var/log/apache2/cgitest.access.log
    ErrorLog /var/log/apache2/cgitest.error.log
    <Directory /www/cgitest>
            Allow from all
            Options +execCGI
            AddHandler cgi-script .cgi
            DirectoryIndex cgitest.cgi
    </Directory>
</VirtualHost>

touch /www/cgitest/cgitest.cgi
chmod 755 /www/cgitest/cgitest.cgi
```

-----------------**cgitest.cgi**----------------------------------

```
#!/bin/sh        <------  These 3 following lines MUST be there
echo Content-type: text/html
echo

# This above header and empty echo after it is VERY important.
# Otherwise Apache shows an error : Content Header missing
# The HTML code enclosed in quotes is also very important......

echo "<HTML><HEAD><TITLE>CGI TEST Seite</TITLE></HEAD>"
echo "<BODY bgcolor=lightcyan>"

echo "<H1><CENTER>SYSTEM INFO</CENTER></H1><P>"
echo "<H3>Ihre IP Addr. ist :</H3><H2>$REMOTE_ADDR</H2><BR>"

#---Display content of /etc/fstab
echo "<HR><H3>System /etc/fstab</H3><BR><pre>"
/bin/cat /etc/fstab
echo "</pre><BR><HR>"

#---Display free space of all mounted disks in Linux ---------
echo "<Center><H1>DISK SPACE</H1></Center><BR><pre>"
/bin/df -h
echo "</pre><HR>"

#---Display all the system Processes ---
echo "<Center><H3>PROCESS INFO</H3></Center><BR><pre>"
/bin/ps -eo pid,ppid,user,nice,args --sort user

#---Display Apache's user name and group
echo "</pre><BR><HR>"
echo "<H3>Apache ist $(id -nu) Benutzer. Er ist Mitglied von
Gruppe $(id -ng)</H3>"
echo "<BR><HR>"
echo "<Center><H3>Inhalt von /root Verzeichnis</H3></Center><PRE>"
/usr/bin/sudo ls /root     (see SUDO below)
echo "</pre><BR><HR>"
echo "<Center><H3>Inhalt von /etc/shadow Datei</H3></Center><PRE>"
/bin/cat /etc/shadow       (see SUDO below)
echo "</pre><BR><HR>"

echo "</BODY></HTML>"
```

--------------------- SUDO----------------------
Edit /etc/sudoers with the command:
visudo

```
wwwrun ALL=NOPASSWD:/usr/bin/sudo ls /root,/bin/cat /etc/shadow
```

--------------- **Webalizer** --------------------------------

```
#------------- LOG INFO of homelinux.net -------
<VirtualHost 192.168.10.50>
    DocumentRoot /var/log/apache2/homelinux.net/webalized
    ServerName log1.homelinux.net
    <Directory /var/log/apache2/homelinux.net/webalized>
        DirectoryIndex webalize.html
        AuthName LogFiles
        AuthType Basic
        AuthUserFile /etc/apache2/.okusers
        require user michel elop devesh pierre
    </Directory>
    ErrorLog /var/log/apache2/homelinux.net/Log_error.log
    TransferLog /var/log/apache2/homelinux.net/Log_access.log
</VirtualHost>
```

----/var/log/apache2/homelinux.net/webalize/**webalize.html**

```
<html>
<head>
     <Title> Web Access Statistics</Title>
</head>
<body>

<center> 
<a href="http://log1.homelinux.net/webalize.cgi">Webalize
NOW !!!</a></center>

</body>
</html>
```

----/var/log/apache2/homelinux.net/webalize/**webalize.cgi**

```
#!/bin/sh
#--- Starts the webalizer for the present log file-----------
echo "Content-Type: text/html"
echo ""
sudo /usr/bin/webalizer -Q -n homelinux.net -o .  \ ../access.log
&>/dev/null
cat index.html
```

---- /etc/**sudoers** --------------------
```
# Host alias specification
root    ALL = (ALL) ALL
wwwrun  ALL = NOPASSWD:/usr/bin/webalizer
```

IDS - CGI Installation

1) Install the following Packages from Original SuSE CDs.
```
perl-Image-Info
perl-PerlMagick (Depends on ImageMagick Package)
jpeg (uses jpegtran program)
```

2) Uncompress the the ISD system `ids.tar.gz` into the directory:
```
/srv/www/htdocs/ids/
```

3) Configure a Virtual Host in Apache2 as follows:
```
<VirtualHost 192.168.100.70>
        ServerName pictures.linux.site
        DocumentRoot /srv/www/htdocs/ids
        <Directory /srv/www/htdocs/ids>
             order deny,allow
             allow from all
             DirectoryIndex index.cgi
             Options +ExecCGI +FollowSymLinks
             AddHandler cgi-script .cgi
             AllowOverride AuthConfig Limit
        </Directory>
</VirtualHost>
```

4) Make sure that owners of the ISD directories are as follows:
```
drwxr-xr-x  11 wwwrun root     456 Apr 27  2002 .
drwxr-xr-x  12 root   root    1712 Feb 13 19:44 ..
drwxr-xr-x   3 root   root     208 Apr 27  2002 admin
drwxr-xr-x   2 wwwrun root      48 Mar 23  2002 album-data
drwxr-xr-x   2 wwwrun root      48 Mar 23  2002 albums
-rw-r--r--   1 wwwrun root     737 Mar 23  2002 ids.conf
-rw-r--r--   1 root   root   39426 Dec 16  2001 idsShared.pm
drwxr-xr-x   2 wwwrun root      48 Mar 23  2002 image-cache
-rwxr-xr-x   1 root   root   43790 Oct  6  2001 index.cgi
drwxr-xr-x   2 root   root     392 Apr 27  2002 localizations
drwxr-xr-x   2 wwwrun root      80 Apr 28  2002 logs
drwxr-xr-x   2 wwwrun root     184 Apr 27  2002 postcomment
-rwxr-xr-x   1 root   root    3436 Oct  6  2001 previewmaker.pl
drwxr-xr-x   3 root   root     256 Apr 27  2002 site-images
-rw-r--r--   1 wwwrun root     393 Dec 16  2001 site_news.txt
drwxr-xr-x   9 root   root     232 Apr 27  2002 themes
```

5) Create the IDS's administrator password
```
htpasswd2 -c /etc/apache2/htpasswd.ids admin
```

6) Copy only directories of images into `/srv/www/htdocs/ids/albums`
It supports also subdirectories, but this root directory must contain only directories.
Note: Make sure that the files and directories copied are owned by `wwwrun` user.

7) To test the system locally enter the following entry in `/etc/hosts`:
```
192.168.100.70        pictures.linux.site
```

8) Restart Apache
```
rcapache2 restart
```

9) In browser enter the address:
```
http://pictures.linux.site
```

- **-------------- `httpd2-prefork` command Options------------------**

       Syntax: **`/usr/sbin/httpd2`** *`-options`*

       Options:

           `-D` *`name`*   Defines a name for use in `<IfDefine` *`name`*`>` directives
                              `<IfDefine name>` is used to define different server global settings and chose which one will be read at start-up of Apache.

           `-d` *`ServerRootDir`*
                              Specifies an alternate initial ServerRoot directory.

           `-f` *`ConfigFile`*
                              Specifies an alternate configuration file.(ServerConfigFile)

           `-C` `D`*`irective`*
                              Processes this directive <u>before</u> reading config files

           `-c` `D`*`irective`*
                              Processes this directive <u>after</u> reading config files

           `-v`   Display Apache's version number
           `-h`   List valid command line options
           `-l` (small L) List compiled-in modules
           `-L`   List core configuration directives
           `-s`   Show virtual hosts settings
           `-t`   Run syntax test for configuration files only.

------**Options Multiviews (Not Valid for SuSE 9.1 and 9.2)**------

Optional explanation: Sequence of Indexes delivery:

       `DirectoryIndex` ?   yes: send the *file*.html
no? then `Multiviews` ?   yes: send the *file*.*de*.html etc.
no? then `Options Indexes` ?   yes: produce and send index of the directory
                                          no: produce an send a '`Forbidden`' message

- Check with browser: `http://localhost`
           Result: German Web site
- In Mozilla browser: Change the LanguagePriority between DE and EN
- Check with browser: `http://localhost`
           Result: English Web site
- in `user.conf:`

```
        <Location />
              Options -Multiviews [-Indexes]
        </Location>
```

- Comment the above 3 lines after the test is done.

LAMP - Linux-Apache-MySQL-PHP

1) Install the following packages:

```
apache2                    mysql                 phpMyAdmin
apache2-prefork            mysql-client          php4-mysql
apache2-mod_php4           mysql-shared
```

phpMyAdmin can be called either via a VirtualHost or direct through the main server:

Via VirtualHost

2a) Either create a Virtualhost pointing to `/srv/www/htdocs/phpMyAdmin` directory
   including the Directives:

```
NameVirtualHost  192.168.71.10  (only if doesn't already exist)
<VirtualHost 192.168.71.10>
     ServerName phpmyadmin.linux.site
     DocumentRoot /srv/www/htdocs/phpMyAdmin
     <Directory /srv/www/htdocs/phpMyAdmin>
          Allow from all
          DirectoryIndex  index.php
     </Directory>
</VirtualHost>
```

2b) Insert the local IP and server name in `/etc/hosts`
```
eg. 129.168.71.10       phpmyadmin.linux.site
```

Via Main Apache server:

(`http://localhost/phpMyAdmin/`)

4) Start the mysql daemon with the command:
```
rcmysql start
```

5) Change the root password in mysql using the commands:
```
mysqladmin -u root password newpasswd
mysqladmin -p -u root -h localhost password newpasswd
```
   Press <Enter> when asked for the password.

6) Change the root password and Absolute URI in
`/srv/www/htdocs/phpMyAdmin/config.inc.php`
eg.
```
$cfg['PmaAbsoluteUri'] = 'http://phpmyadmin.linux.site';
```
or
```
$cfg['PmaAbsoluteUri'] = 'http://localhost/phpMyAdmin';
```

```
$cfg['Servers'][$i]['user']     = 'root';      // MySQL user
$cfg['Servers'][$i]['password'] = 'newpasswd'; // MySQL password
```

7) Start or Restart Apache Server.
```
rcapache2 restart
```
8) Start a browser and write the address:
```
http://phpmyadmin.linux.site or http://localhost/phpMyAdmin/
```

9) Protecting the access to phpMyAdmin:

Via VirtualHost

in already configured VirtualHost instructions block:

```
        <Directory /srv/www/htdocs/phpMyAdmin>
            Allow from all
            DirectoryIndex  index.php
            AuthType Basic
            AuthName "mysql administration"
            AuthUserFile "/etc/apache2/.okmysql"
            require user marie
            satisfy all
        </Directory>
```

Via Main Apache server

in any apache configuration file:

```
<Location /phpMyAdmin>
            Allow from all
            DirectoryIndex  index.php
            AuthType Basic
            AuthName "mysql administration"
            AuthUserFile "/etc/apache2/.okmysql"
            require user marie
            satisfy all
</Location>
```

– Give a password to marie (mysql administrator)

```
    touch /etc/apache2/.okmysql
    htpasswd2 /etc/apache2/.okmysql marie
```

WAMP-Windows-Apache-MySQL-PHP

Installing Apache2, PHP4 and MySQL in Windows2000/XP

There is a web site where you can download an installer which installs all the components of Apache2, PHP4, Mysql, PhpMyAdmin, Webalizer and extras automatically at:
`http://www.apachefriends.org/de/xampp-windows.html`
The lastest version at the moment of writing was: V. 1.4.11
Just run the file and all will be done automatically.

Manual installation for the brave!
Note: This installation cuts corners and does things that might not be necessary.
I've used this method and got a working setup.
For other alternatives, please refer to the document:
`http://www.php.net/manual/en/install.apache2.php`

INSTALLING APACHE2

1) Download the latest stable Apache for Windows from the internet:
          `http://www.apache.org`
   It's a `.msi` file and can be installed immediately

2) In my case, I kept the recommended install path of Apache:
          `C:/programm(e)/Apache Group/Apache2/`

INSTALLING MYSQL

1) Download the MySQL windows installer from the Internet:
      `http://dev.mysql.com/downloads/mysql/4.0.html`
   It's a ZIP file
2) Unpack the ZIP file into a temporary directory and run the program `SETUP.EXE`
      I installed it in `C:\mysql` directory

INSTALLING PHP4(as apache module)

1) Download the ZIP file from:
      `http://www.php.net/downloads.php`
2) Unzip the files into `C:/php` directory
3) copy all the `.dll` files from `C:/php/dlls` and `C:/php/sapi` to `C:/php` directory

INSTALLING phpMyAdmin

1) Download the latest version of phpMyAdmin ZIP file from:
      `http://www.phpmyadmin.net/home_page/`
2) Unzip the file into the directory:
      `C:\Programme\Apache Group\Apache2\htdocs\phpmyadmin\`
3) Edit the `config.inc.php` in the `phpmyadmin` directory and:
      - add the proper full URI of the phpMyAdmin:
        `$cfg['PmaAbsoluteUri'] = 'http://localhost/phpmyadmin/';`
 Optional:(If you leave the root password blank in MySQL then leave it blank here also)
   - add the MySQL `root` (administrator) password in clear text in:
```
$cfg['Servers'][$i]['user']      = 'root';  // MySQL user
$cfg['Servers'][$i]['password']  = '';       // MySQL password
                        (only needed with'config' auth_type)
```

CONFIGURATION

1) Edit the `httpd.conf` file and:
        - Change to the follwoing settings to:
```
DocumentRoot "C:/Programme/Apache Group/Apache2/htdocs"
DirectoryIndex index.html index.html.var index.php
```
      - Add the following settings:
```
LoadModule php4_module c:/php/php4apache2.dll
LoadFile C:/php/php4ts.dll
AddType application/x-httpd-php .php .php3 .php4 .phtml
```

2) Edit the `C:\php\php.ini` file
      - You will need to change the `extension_dir` setting to
        point to your `php-install-dir`, or where you have placed
        your `'php_*.dll' files`. eg: `c:\php`
        It is located around the line 442
      - Set the `'doc_root'` to point to your webservers `document_root`.
        in my case: `C:/Programme/Apache Group/Apache2/htdocs`

3) Create the file `C:\MY.CNF` and insert the following lines in it:
```
[mysqld]
basedir=C:/mysql/
datadir=C:/mysql/data/
```

      Note: See the MY.CNF example from XAMPP below

OPERATING WAMP

1) Open a DOS window `(cmd)` and give the command:
  `C:\mysql\bin\mysqld.exe`
When all is ok then an icon can be created to start it either from the autostart area or by hand.

2) start Apache through the Windows start menu

3) Start a browser and give the address:
  `http://localhost/phpmyadmin/`

You should have a phpMyAdmin web site with full control over the MySQL databases. This would confirm that your Apache, PHP and MySql are all working...so far go good!

MY.CNF (Example from XAMPP)

```
# The MySQL client
[client]
#password        = your_password
port             = 3306
socket           = c:/WAMP/xampp/mysql/mysql.sock


# Here follows entries for some specific programs


# The MySQL server
[mysqld]
port             = 3306
socket           = c:/WAMP/xampp/mysql/mysql.sock
skip-locking
set-variable     = key_buffer=16M
set-variable     = max_allowed_packet=1M
set-variable     = table_cache=64
set-variable     = sort_buffer=512K
set-variable     = net_buffer_length=8K
set-variable     = myisam_sort_buffer_size=8M
log-bin
server-id        = 1


basedir=c:/WAMP/xampp/mysql
tmpdir=c:/WAMP/xampp/tmp
datadir=c:/WAMP/xampp/mysql/data


#bind-address=192.168.1.1
#log-update       = /path-to-dedicated-directory/hostname
```

Uncomment the following if you are using BDB tables
```
#set-variable     = bdb_cache_size=4M
#set-variable     = bdb_max_lock=10000


skip-innodb
```

Uncomment the following if you are using InnoDB tables
```
#innodb_data_home_dir = c:/WAMP/xampp/mysql/
#innodb_data_file_path = ibdata1:10M:autoextend
#innodb_log_group_home_dir = c:/WAMP/xampp/mysql/
#innodb_log_arch_dir = c:/WAMP/xampp/mysql/
```
You can set .._buffer_pool_size up to 50 - 80 %
of RAM but beware of setting memory usage too high
```
#set-variable = innodb_buffer_pool_size=16M
#set-variable = innodb_additional_mem_pool_size=2M
```
Set .._log_file_size to 25 % of buffer pool size
```
#set-variable = innodb_log_file_size=5M
#set-variable = innodb_log_buffer_size=8M
```
#innodb_flush_log_at_trx_commit=1
```
#set-variable = innodb_lock_wait_timeout=50
```

```
[mysqldump]
quick
set-variable    = max_allowed_packet=16M

[mysql]
no-auto-rehash
```
Remove the next comment character if you are not familiar with SQL
```
#safe-updates
[isamchk]
set-variable    = key_buffer=20M
set-variable    = sort_buffer=20M
set-variable    = read_buffer=2M
set-variable    = write_buffer=2M

[myisamchk]
set-variable    = key_buffer=20M
set-variable    = sort_buffer=20M
set-variable    = read_buffer=2M
set-variable    = write_buffer=2M

[mysqlhotcopy]
interactive-timeout

[WinMySQLadmin]
Server=c:/WAMP/xampp/mysql/bin/mysqld-nt.exe
```