LAMP or LEMP Setup

Disclaimer: вы смотрите просто запись лекции, это **НЕ** специально подготовленный видеокурс!

What is LAMP or LEMP?

L	Linux
A	Apache httpd
M	MySQL
P	PHP

L	Linux
E	Nginx (/ˌɛndʒɪnˈɛks/)
M	MySQL (or MariaDB)
P	PHP

Initial assumptions and links

Assumptions: you are able to create a VirtualBox VM, you know how to use Linux, you are able to install Linux.

Just in case:

https://ubuntu.com/download/server

https://askubuntu.com

https://stackoverflow.com

https://google.com

Yes, we use Server edition. If you prefer Desktop edition – it's up to you.

Step 1: create a VM

Create a VirtualBox VM with the following settings

	Minimal	Preferred
RAM	1024 MB	4096 MB
HDD	25 GB	250 GB
CPU	1 core	4 cores
Network 1	NAT	NAT
Network 2	Host-only	Host-only

8192 is better ☺

Other settings are not really important…

Step 2: install (or upgrade) Ubuntu server

Install the latest Ubuntu server from ubuntu.com.

As usual, perform the next commands (just in case):

```
sudo apt-get update
sudo apt-get upgrade
sudo reboot now
```

Step 3: connect through SSH

List network interfaces:

```
ip address
```

Find your host-only adapter ip (something like this):

```
inet 192.168.56.102/24
```

Connect to this ip with your preferred SSH client:

```
putty.exe -ssh 192.168.56.102:22
```

Step 4: install Apache httpd

Install Apache httpd:

```
sudo apt-get install apache2
```

Test current config:

```
sudo apache2ctl configtest
```

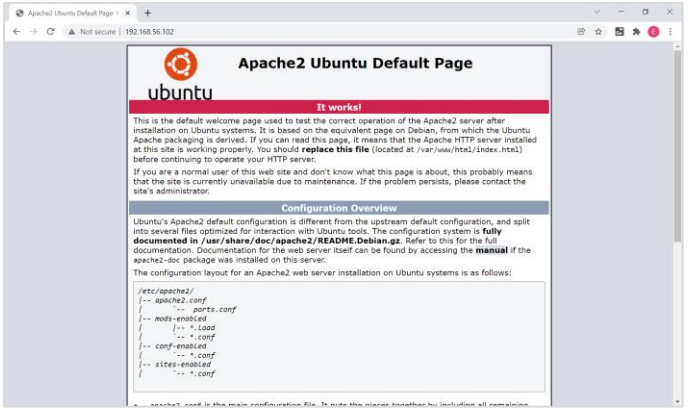
Start Apache httpd:

```
sudo systemctl start apache2
```

Step 5: test Apache httpd connection

On your host OS connect to your VM via browser:

```
http://192.168.56.102
```



Step 6: install MySQL

Install MySQL:

```
sudo apt-get install mysql-server
```

Configure MySQL:

```
sudo mysql_secure_installation
```

Restart MySQL:

```
sudo systemctl restart mysql
```

Step 7: install PHP

Install PHP:

```
sudo apt-get install php
libapache2-mod-php php-xml php-
mysql
```

Stop MySQL and Apache httpd:

```
sudo systemctl stop mysql
sudo systemctl stop apache2
```

Step 8: configure Apache httpd (part 1)

Enable mod_rewrite:

```
sudo a2enmod rewrite
```

In /etc/apache2/apache2.conf:

Replace	`AllowOverride None`
With	`AllowOverride All`

Step 8: configure Apache httpd (part 2)

In /etc/apache2/sites-available/000-default.conf:

Replace	`DocumentRoot /var/www/html`
With	`DocumentRoot /var/www`

Step 9: configure PHP (part 1)

Check the version!

In /etc/php/8.0/apache2/php.ini set the next values:

output_buffering	Off
max_execution_time	300
memory_limit	32G
error_reporting	E_ALL
display_errors	On

Step 9: configure PHP (part 2)

Check the version!

In /etc/php/8.0/apache2/php.ini set the next values:

display_startup_errors	On
error_log	error.log
post_max_size	32G
upload_max_filesize	32G
date.timezone	"Europe/Minsk"

Step 9: configure PHP (part 3)

Check the version!

In /etc/php/8.0/apache2/php.ini enable extensions:

```
curl
```

```
gd
```

```
mbstring
```

```
mysqli
```

```
pdo_mysql
```

Step 10: install PhpMyAdmin

Download the latest version from https://www.phpmyadmin.net/:

```
wget {the_latest_version_URL}
```

Extract it into /var/www/phpmyadmin:

```
unzip {zip_file} -d /var/www
mv /var/www/{oldname} /var/www/phpmyadmin
```

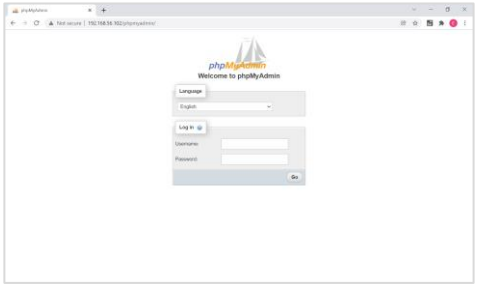
Step 11: reboot and test

Reboot your VM:

```
sudo reboot now
```

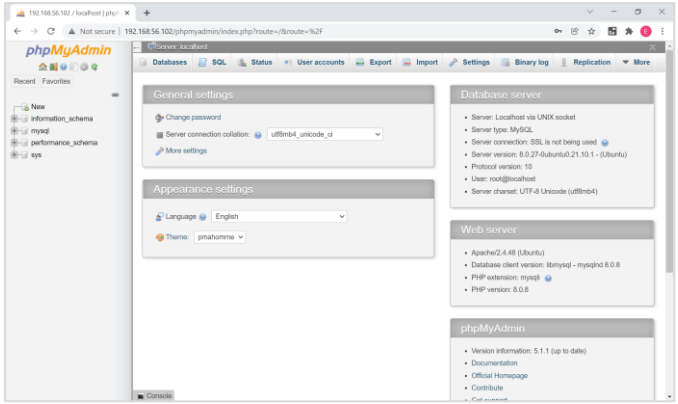
On your host OS connect to your VM via browser:

```
http://192.168.56.102/phpmyadmin/
```



Step 12: perform pre-final check

Login to phpMyAdmin with you MySQL credentials:



In case of “access denied”:

```
sudo mysql

UPDATE `mysql`.`user` SET `plugin` =
'mysql_native_password' WHERE `User`='root';

ALTER USER 'root'@'localhost' IDENTIFIED WITH
mysql_native_password BY 'password_here';

FLUSH PRIVILEGES;
```

Almost done! ☺

Step 13: install Nginx

Stop Apache httpd:

```
sudo systemctl stop apache2
```

Install Nginx:

```
sudo apt-get install nginx
```

Install PHP fpm:

```
sudo apt-get install php-fpm
```

Step 14: configure Nginx (part 1)

In /etc/nginx/sites-available/default:

Replace	`listen 80 default_server`
With	`listen 81 default_server`
Replace	`listen [::]:80 default_server`
With	`listen [::]:81 default_server`

Step 14: configure Nginx (part 2)

In /etc/nginx/sites-available/default:

Replace	`root /var/www/html`
With	`root /var/www`
Replace	`index index.html`
With	`index index.php index.html`

Step 14: configure Nginx (part 3)

In /etc/nginx/sites-available/default:

After

```
location / {
    # First attempt to serve request as file, then
    # as directory, then fall back to displaying a 404.
    try_files $uri $uri/ =404;
 }
```

Add

```
location ~ \.php$ {
    include snippets/fastcgi-php.conf;
    fastcgi_pass unix:/var/run/php/php8.0-fpm.sock;
}
```

Step 15: test Nginx configuration

Text Nginx configuration:

```
sudo nginx -t
```

Step 16: configure PHP for Nginx

Check the version!

In /etc/php/8.0/fpm/php.ini set the next values:

output_buffering	Off
max_execution_time	300
memory_limit	32G
error_reporting	E_ALL
display_errors	On

Step 16: configure PHP for Nginx

Check the version!

In /etc/php/8.0/fpm/php.ini set the next values:

display_startup_errors	On
error_log	error.log
post_max_size	32G
upload_max_filesize	32G
date.timezone	"Europe/Minsk"

Step 16: configure PHP for Nginx

Check the version!

In /etc/php/8.0/fpm/php.ini set the next values:

`cgi.fix_pathinfo`	`0`

Step 16: configure PHP for Nginx

Check the version!

In /etc/php/8.0/fpm/php.ini enable extensions:

```
curl
```

```
gd
```

```
mbstring
```

```
mysqli
```

```
pdo_mysql
```

Step 17: reboot and test

Reboot your VM:

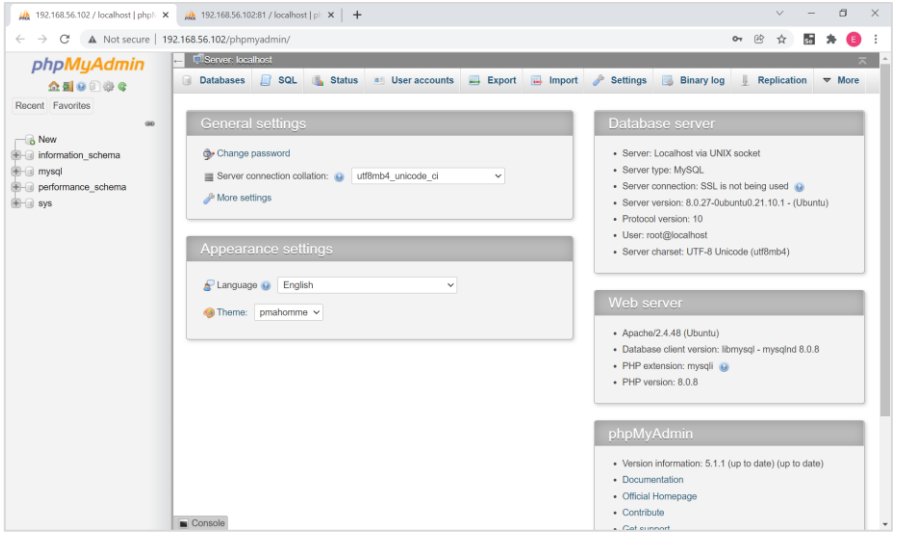
```
sudo reboot now
```

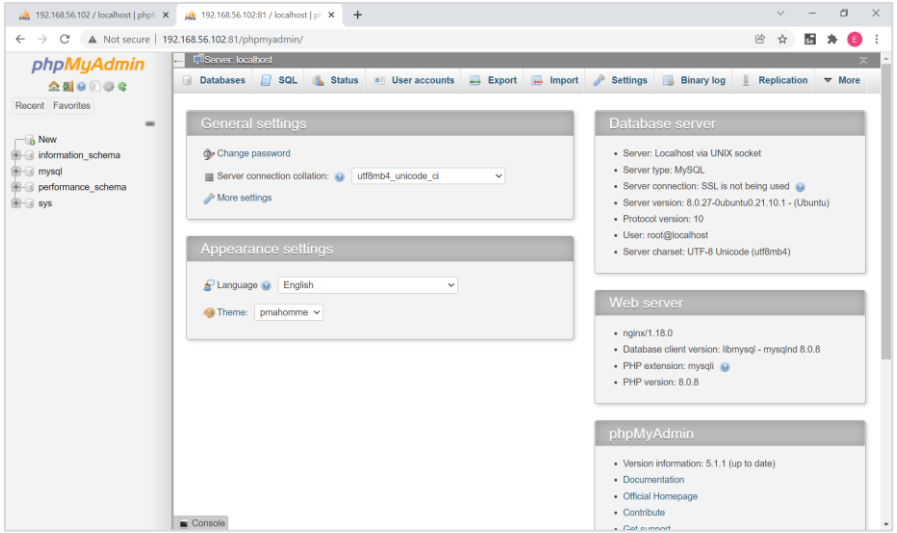
On your host OS connect to your VM via browser:

```
http://192.168.56.102/phpmyadmin/
```

```
http://192.168.56.102:81/phpmyadmin/
```

Done!


192.168.56.102 / localhost | php
192.168.56.102:81 / localhost | p
Not secure | 192.168.56.102/phpmyadmin/
phpMyAdmin
Recent Favorites
New
information_schema
mysql
performance_schema
sys
Server: localhost
Databases SQL Status User accounts Export Import Settings Binary log Replication More
General settings
Change password
Server connection collation: utf8mb4_unicode_ci
More settings
Appearance settings
Language English
Theme: pmahomme
Database server
Server: Localhost via UNIX socket
Server type: MySQL
Server connection: SSL is not being used
Server version: 8.0.27-0ubuntu0.21.10.1 - (Ubuntu)
Protocol version: 10
User: root@localhost
Server charset: UTF-8 Unicode (utf8mb4)
Web server
Apache/2.4.48 (Ubuntu)
Database client version: libmysql - mysqlnd 8.0.8
PHP extension: mysqli
PHP version: 8.0.8
phpMyAdmin
Version information: 5.1.1 (up to date) (up to date)
Documentation
Official Homepage
Contribute
Console


192.168.56.102 / localhost | php
192.168.56.102:81 / localhost | p
Not secure | 192.168.56.102:81/phpmyadmin/
phpMyAdmin
Recent Favorites
New
information_schema
mysql
performance_schema
sys
Server: localhost
Databases SQL Status User accounts Export Import Settings Binary log Replication More
General settings
Change password
Server connection collation: utf8mb4_unicode_ci
More settings
Appearance settings
Language English
Theme: pmahomme
Database server
Server: Localhost via UNIX socket
Server type: MySQL
Server connection: SSL is not being used
Server version: 8.0.27-0ubuntu0.21.10.1 - (Ubuntu)
Protocol version: 10
User: root@localhost
Server charset: UTF-8 Unicode (utf8mb4)
Web server
nginx/1.18.0
Database client version: libmysql - mysqlnd 8.0.8
PHP extension: mysqli
PHP version: 8.0.8
phpMyAdmin
Version information: 5.1.1 (up to date)
Documentation
Official Homepage
Contribute
Console

Useful idea 1: see your PHP configuration

In /var/www create a "info.php" with such code:

```
<?php
phpinfo();
```

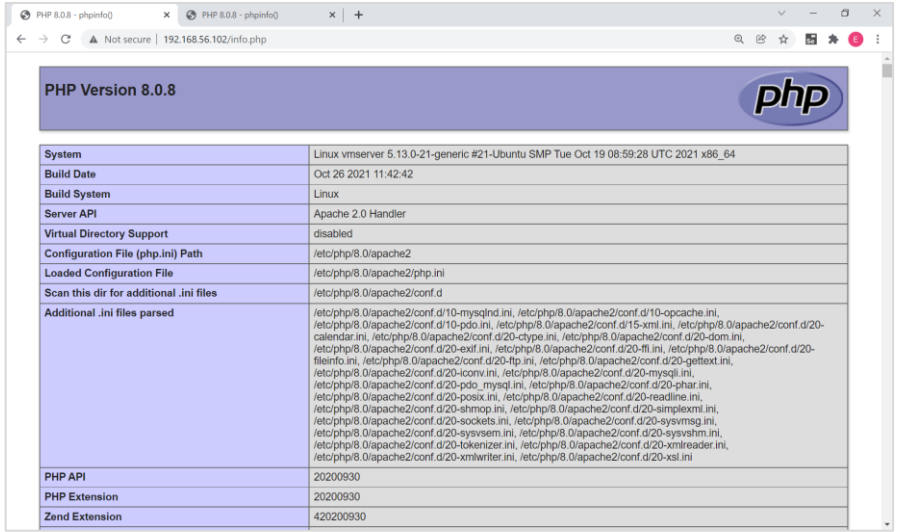
This is the DocumentRoot. All your PHP applications should be here (or in subfolders).

On your host OS open it via browser:

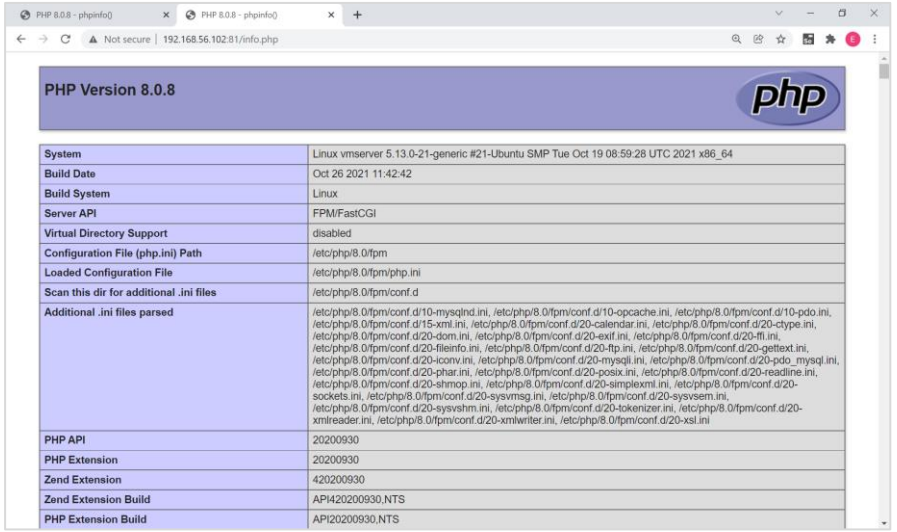
```
http://192.168.56.102/info.php
```

```
http://192.168.56.102:81/info.php
```

Useful idea 1: see your PHP configuration



System	Linux vmserver 5.13.0-21-generic #21-Ubuntu SMP Tue Oct 19 08:59:28 UTC 2021 x86_64
Build Date	Oct 26 2021 11:42:42
Build System	Linux
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.0/apache2
Loaded Configuration File	/etc/php/8.0/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/8.0/apache2/conf.d
Additional .ini files parsed	/etc/php/8.0/apache2/conf.d/10-mysqlnd.ini, /etc/php/8.0/apache2/conf.d/10-opcache.ini, /etc/php/8.0/apache2/conf.d/10-pdo.ini, /etc/php/8.0/apache2/conf.d/15-xml.ini, /etc/php/8.0/apache2/conf.d/20-calendar.ini, /etc/php/8.0/apache2/conf.d/20-ctype.ini, /etc/php/8.0/apache2/conf.d/20-dom.ini, /etc/php/8.0/apache2/conf.d/20-exif.ini, /etc/php/8.0/apache2/conf.d/20-ffi.ini, /etc/php/8.0/apache2/conf.d/20-fileinfo.ini, /etc/php/8.0/apache2/conf.d/20-ftp.ini, /etc/php/8.0/apache2/conf.d/20-gettext.ini, /etc/php/8.0/apache2/conf.d/20-iconv.ini, /etc/php/8.0/apache2/conf.d/20-mysqli.ini, /etc/php/8.0/apache2/conf.d/20-pdo_mysql.ini, /etc/php/8.0/apache2/conf.d/20-phar.ini, /etc/php/8.0/apache2/conf.d/20-posix.ini, /etc/php/8.0/apache2/conf.d/20-readline.ini, /etc/php/8.0/apache2/conf.d/20-shmop.ini, /etc/php/8.0/apache2/conf.d/20-simplexml.ini, /etc/php/8.0/apache2/conf.d/20-sockets.ini, /etc/php/8.0/apache2/conf.d/20-sysvmsg.ini, /etc/php/8.0/apache2/conf.d/20-sysvsem.ini, /etc/php/8.0/apache2/conf.d/20-sysvshm.ini, /etc/php/8.0/apache2/conf.d/20-tokenizer.ini, /etc/php/8.0/apache2/conf.d/20-xmlreader.ini, /etc/php/8.0/apache2/conf.d/20-xmlwriter.ini, /etc/php/8.0/apache2/conf.d/20-xsl.ini
PHP API	20200930
PHP Extension	20200930
Zend Extension	420200930



System	Linux vmserver 5.13.0-21-generic #21-Ubuntu SMP Tue Oct 19 08:59:28 UTC 2021 x86_64
Build Date	Oct 26 2021 11:42:42
Build System	Linux
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/8.0/fpm
Loaded Configuration File	/etc/php/8.0/fpm/php.ini
Scan this dir for additional .ini files	/etc/php/8.0/fpm/conf.d
Additional .ini files parsed	/etc/php/8.0/fpm/conf.d/10-mysqlnd.ini, /etc/php/8.0/fpm/conf.d/10-opcache.ini, /etc/php/8.0/fpm/conf.d/10-pdo.ini, /etc/php/8.0/fpm/conf.d/15-xml.ini, /etc/php/8.0/fpm/conf.d/20-calendar.ini, /etc/php/8.0/fpm/conf.d/20-ctype.ini, /etc/php/8.0/fpm/conf.d/20-dom.ini, /etc/php/8.0/fpm/conf.d/20-exif.ini, /etc/php/8.0/fpm/conf.d/20-ffi.ini, /etc/php/8.0/fpm/conf.d/20-fileinfo.ini, /etc/php/8.0/fpm/conf.d/20-ftp.ini, /etc/php/8.0/fpm/conf.d/20-gettext.ini, /etc/php/8.0/fpm/conf.d/20-iconv.ini, /etc/php/8.0/fpm/conf.d/20-mysqli.ini, /etc/php/8.0/fpm/conf.d/20-pdo_mysql.ini, /etc/php/8.0/fpm/conf.d/20-phar.ini, /etc/php/8.0/fpm/conf.d/20-posix.ini, /etc/php/8.0/fpm/conf.d/20-readline.ini, /etc/php/8.0/fpm/conf.d/20-shmop.ini, /etc/php/8.0/fpm/conf.d/20-simplexml.ini, /etc/php/8.0/fpm/conf.d/20-sockets.ini, /etc/php/8.0/fpm/conf.d/20-sysvmsg.ini, /etc/php/8.0/fpm/conf.d/20-sysvsem.ini, /etc/php/8.0/fpm/conf.d/20-sysvshm.ini, /etc/php/8.0/fpm/conf.d/20-tokenizer.ini, /etc/php/8.0/fpm/conf.d/20-xmlreader.ini, /etc/php/8.0/fpm/conf.d/20-xmlwriter.ini, /etc/php/8.0/fpm/conf.d/20-xsl.ini
PHP API	20200930
PHP Extension	20200930
Zend Extension	420200930
Zend Extension Build	API420200930,NTS
PHP Extension Build	API20200930,NTS

Useful idea 2: do some enhancements

Setup and configure PHP for CLI.

Setup FTP server.

Configure virtual hosts.

These actions are not necessary but may simplify your work.

Useful idea 3: simplify your work with FAR (far2l)

Install far2l:

```
sudo add-apt-repository ppa:far2l-team/ppa
sudo apt-get update
sudo apt-get install far2l
```

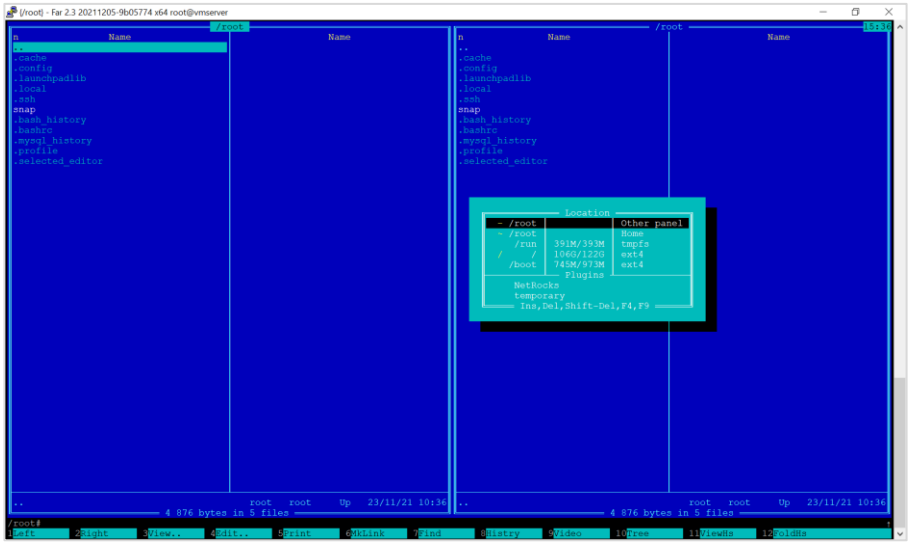
Use patched putty terminal:

https://github.com/unxed/putty4far2l

Useful idea 3: simplify your work with FAR (far2l)

Run far2l and enjoy:

```
sudo far2l --tty
```



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