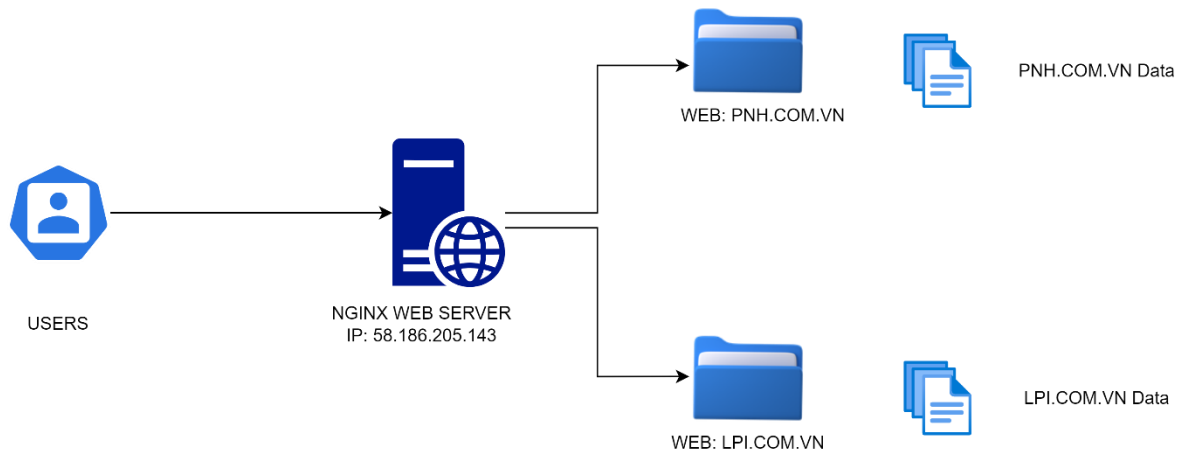




LAB – TOPIC 20: WEB SERVER

I. WEB SERVER (NGINX)

1. Mô hình



2. Cài đặt NGinx:

```
[root@tuandq1-pnh2 yum.repos.d]# yum install nginx
Last metadata expiration check: 0:12:35 ago on Mon Feb 14 05:38:52 2022.
Dependencies resolved.
```

| Package | Architecture | Version | Repository |
|-----------------------------|--------------|--|-----------------|
| Installing: | | | |
| nginx | x86_64 | 1:1.14.1-9.module_el8.0.0+184+e34fea82 | |
| appstream | 570 k | | |
| Installing dependencies: | | | |
| gd | x86_64 | 2.2.5-7.el8 | appstream 144 k |
| libbigkit-libs | x86_64 | 2.1-14.el8 | appstream 55 k |
| libXpm | x86_64 | 3.5.12-8.el8 | appstream 58 k |
| libjpeg-turbo | x86_64 | 1.5.3-12.el8 | appstream |
| libtiff | x86_64 | 4.0.9-20.el8 | appstream 188 k |
| libwebp | x86_64 | 1.0.0-5.el8 | appstream 272 k |
| libxslt | x86_64 | 1.1.32-6.el8 | baseos 250 k |
| nginx-all-modules | noarch | 1:1.14.1-9.module_el8.0.0+184+e34fea82 | |
| appstream | 23 k | | |
| nginx-filesystem | noarch | 1:1.14.1-9.module_el8.0.0+184+e34fea82 | |
| appstream | 24 k | | |
| nginx-mod-http-image-filter | x86_64 | 1:1.14.1-9.module_el8.0.0+184+e34fea82 | |
| appstream | 35 k | | |

```

nginx-mod-http-perl      x86_64      1:1.14.1-9.module_el8.0.0+184+e34fea82
appstream                45 k
nginx-mod-http-xslt-filter x86_64      1:1.14.1-9.module_el8.0.0+184+e34fea82
appstream                33 k
nginx-mod-mail           x86_64      1:1.14.1-9.module_el8.0.0+184+e34fea82
appstream                64 k
nginx-mod-stream         x86_64      1:1.14.1-9.module_el8.0.0+184+e34fea82
appstream                85 k
Enabling module streams:
nginx                    1.14

```

Transaction Summary

```

=====
=====

```

Install 15 Packages

Total download size: 2.0 M

Installed size: 5.1 M

Is this ok [y/N]: y

3. Khởi động và kiểm tra dịch vụ Nginx

```

[root@tuandq1-pnh2 yum.repos.d]# systemctl enable nginx
Created symlink /etc/systemd/system/multi-user.target.wants/nginx.service ->
/usr/lib/systemd/system/nginx.service.
[root@tuandq1-pnh2 yum.repos.d]# systemctl start nginx
[root@tuandq1-pnh2 yum.repos.d]# systemctl status nginx
* nginx.service - The nginx HTTP and reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; vendor
   preset: disabled)
   Active: active (running) since Mon 2022-02-14 05:54:06 UTC; 4s ago
     Process: 997848 ExecStart=/usr/sbin/nginx (code=exited, status=0/SUCCESS)
     Process: 997846 ExecStartPre=/usr/sbin/nginx -t (code=exited,
   status=0/SUCCESS)
     Process: 997844 ExecStartPre=/usr/bin/rm -f /run/nginx.pid (code=exited,
   status=0/SUCCESS)
    Main PID: 997849 (nginx)
       Tasks: 3 (limit: 23510)
      Memory: 7.5M
      CGroup: /system.slice/nginx.service
              |-997849 nginx: master process /usr/sbin/nginx
              |-997850 nginx: worker process
              `--997851 nginx: worker process

Feb 14 05:54:06 tuandq1-pnh2 systemd[1]: Starting The nginx HTTP and reverse
proxy server...
Feb 14 05:54:06 tuandq1-pnh2 nginx[997846]: nginx: the configuration file
/etc/nginx/nginx.conf syntax is ok
Feb 14 05:54:06 tuandq1-pnh2 nginx[997846]: nginx: configuration file
/etc/nginx/nginx.conf test is successful
Feb 14 05:54:06 tuandq1-pnh2 systemd[1]: Started The nginx HTTP and reverse
proxy server.

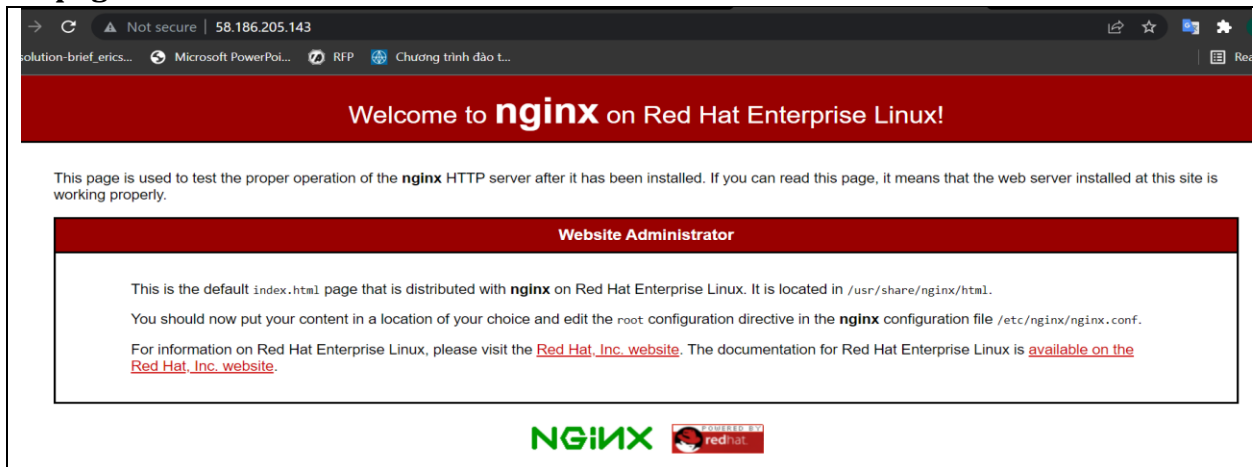
```

```
[root@tuandq1-pnh2 yum.repos.d]# netstat -nlp|grep 80
tcp        0      0 0.0.0.0:80          0.0.0.0:*          LISTEN
997849/nginx: maste
tcp6       0      0 :::80              :::*                LISTEN
997849/nginx: maste
unix 2      [ ACC ]     STREAM    LISTENING   43803      1/systemd
/run/rpcbind.sock
unix 3      [  ]     STREAM    CONNECTED   20431      808/qemu-ga
unix 3      [  ]     DGRAM     12080       1/systemd
unix 3      [  ]     STREAM    CONNECTED   44380      16688/rpcbind
unix 3      [  ]     STREAM    CONNECTED   20432      808/qemu-ga
unix 3      [  ]     STREAM    CONNECTED   24958805   944083/gssproxy
[root@tuandq1-pnh2 yum.repos.d]# [root@tuandq1-pnh2 yum.repos.d]# netstat -
nlp|grep 80
unix 3      [  ]     STREAM    CONNECTED   44380      16688/rpcbind
unix 3      [  ]     STREAM    CONNECTED   20432      808/qemu-ga
unix 3      [  ]     STREAM    CONNECTED   24958805   944083/gssproxy
```

4. Cấu hình firewalld cho phép chạy dịch vụ Nginx (nếu có)

```
firewall-cmd --permanent --zone=public --add-service=http
firewall-cmd --permanent --zone=public --add-service=https
firewall-cmd --reload
```

5. Truy cập bằng webbrowser để kiểm tra xem Nginx đã hoạt động với web default page



6. Tạo một virtual host riêng cho hai domain pnh.com.vn, lpi.com.vn cấu hình

```
[root@tuandq1-pnh2 conf.d]# vi /etc/nginx/conf.d/pnh.com.vn.conf
# create new
server {
    listen      80;
    server_name www.pnh.com.vn;

    location / {
        root    /usr/share/nginx/pnh.com.vn;
```

```

        index index.html index.htm;
    }
}
[root@tuandq1-pnh2 conf.d]# vi /etc/nginx/conf.d/lpi.com.vn.conf
# create new
server {
    listen      80;
    server_name www.lpi.com.vn;

    location / {
        root    /usr/share/nginx/lpi.com.vn;
        index   index.html index.htm;
    }
}

```

7. Tạo một thư mục để lưu trữ dữ liệu cho trang web pnh.com.vn, lpi.com.vn và một trang mặc định index.html

```

[root@tuandq1-pnh2 conf.d]# mkdir /usr/share/nginx/pnh.com.vn
[root@tuandq1-pnh2 conf.d]# mkdir /usr/share/nginx/lpi.com.vn
[root@tuandq1-pnh2 conf.d]# vi /usr/share/nginx/pnh.com.vn/index.html
<html>
<body>
<div style="width: 100%; font-size: 40px; font-weight: bold; text-align:
center;">
Nginx Virtual Host Test Page WWW.PNH.COM.VN
</div>
</body>
</html>
[root@tuandq1-pnh2 conf.d]# vi /usr/share/nginx/lpi.com.vn/index.html
<html>
<body>
<div style="width: 100%; font-size: 40px; font-weight: bold; text-align:
center;">
Nginx Virtual Host Test Page WWW.LPI.COM.VN
</div>
</body>
</html>

```

8. Kết hợp khai báo bản ghi www.pnh.com.vn trên DNS server trở về Ip của Webserver.

```

[root@lpi named]# vi pnh.com.vn.lan
$TTL 86400
@ IN SOA dns.pnh.com.vn. dinhvinhkhong@gmail.com. (
    2019052403 ;Serial
    3600       ;Refresh
    1800       ;Retry
    604800     ;Expire

```

```

      86400      ;Minimum TTL
)
@      IN      NS      dns1.pnh.com.vn.
@      IN      NS      dns2.pnh.com.vn.
@      IN      A       210.211.108.160
www    IN      A       58.186.205.143
mail   IN      A       10.10.10.2
dns1   IN      A       58.186.205.148
dns2   IN      A       58.186.205.34

```

9. Kiểm tra và truy vấn từ web browser bằng domain vừa khai báo.

```

[root@lpi named]# nslookup
> server localhost
Default server: localhost
Address: 127.0.0.1#53
Default server: localhost
Address: 127.0.0.1#53
> www.pnh.com.vn
Server:      localhost
Address:     127.0.0.1#53

Name:   www.pnh.com.vn
Address: 58.186.205.143

```

10. Cấu hình Nginx hỗ trợ SSL/TSL

- Tạo thư mục chứa self-sign key

```

[root@lpi named]# mkdir /etc/ssl/private
[root@lpi named]# chmod 700 /etc/ssl/private

```

- Tạo cặp chứng chỉ và khóa với OpenSSL

```

[root@lpi named]# openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout
/etc/ssl/private/nginx-selfsigned.key -out /etc/ssl/certs/nginx-selfsigned.crt
Country Name (2 letter code) [AU]:VN
State or Province Name (full name) [Some-State]:HN
Locality Name (eg, city) []:HN
Organization Name (eg, company) [Internet Widgits Pty Ltd]:PNH
Organizational Unit Name (eg, section) []:LPI
Common Name (e.g. server FQDN or YOUR name) []:LPI
Email Address []:dinhvinhkhong@gmail.com
[root@lpi named]# openssl dhparam -out /etc/ssl/certs/dhparam.pem 2048

```

- Cấu hình Nginx sử dụng SSL

```

[root@lpi named]# vi /etc/nginx/conf.d/ssl.conf
server {
    listen 443 http2 ssl;
    listen [::]:443 http2 ssl;

    server_name 58.186.205.143;

```

```

ssl_certificate /etc/ssl/certs/nginx-selfsigned.crt;
ssl_certificate_key /etc/ssl/private/nginx-selfsigned.key;
ssl_dhparam /etc/ssl/certs/dhparam.pem;
root /usr/share/nginx/html;

location / {

error_page 404 /404.html;
location = /404.html {

error_page 500 502 503 504 /50x.html;
location = /50x.html {

}
}

```

- Cấu hình redirect từ http sang https

```

[root@lpi named]# vi /etc/nginx/default.d/ssl-redirect.conf
return 301 https://$host$request_uri/;

```

- Thực hiện load lại cấu hình Nginx

```

[root@lpi named]# nginx -t
[root@lpi named]# systemctl restart nginx

```

- Thực hiện test dịch vụ với https

```

https://server_domain_or_Ip

```

11. Thực hiện cấu hình Nginx với PHP.

- Thực hiện kiểm tra và cài đặt php

```

[root@tuandq1-pnh2 nginx]# dnf module list php
Last metadata expiration check: 4:16:26 ago on Mon Aug 8 08:53:37 2022.
CentOS Linux 8 - AppStream
Name                               Stream                               Profiles
Summary
php                                7.2 [d]                             common [d], devel,
minimal                           PHP scripting language
php                                7.3                                 common [d], devel,
minimal                           PHP scripting language
php                                7.4                                 common [d], devel,
minimal                           PHP scripting language

Hint: [d]efault, [e]nabled, [x]disabled, [i]nstalled

[root@tuandq1-pnh2 nginx]# dnf module reset php
Last metadata expiration check: 4:17:30 ago on Mon Aug 8 08:53:37 2022.

```

```

Dependencies resolved.
Nothing to do.
Complete!
[root@tuandq1-pnh2 nginx]# dnf module enable php:7.4
Last metadata expiration check: 4:17:39 ago on Mon Aug  8 08:53:37 2022.
Dependencies resolved.
=====
=====
Package                Architecture          Version
Repository              Size
=====
=====
Enabling module streams:
  httpd                  2.4
  php                    7.4

Transaction Summary
=====
=====

Is this ok [y/N]: y
Complete!
[root@tuandq1-pnh2 nginx]# dnf module -y install php:7.4/common
Last metadata expiration check: 4:17:51 ago on Mon Aug  8 08:53:37 2022.
Dependencies resolved.
=====
=====
Package                Architecture          Version
Repository              Size
=====
=====
Installing group/module packages:
  php-cli                x86_64                7.4.19-
1.module_el18.5.0+815+1c4fd2e5      appstream              3.1
M
  php-common              x86_64                7.4.19-
1.module_el18.5.0+815+1c4fd2e5      appstream              702
k
  php-fpm                 x86_64                7.4.19-
1.module_el18.5.0+815+1c4fd2e5      appstream              1.6
M
  php-json                 x86_64                7.4.19-
1.module_el18.5.0+815+1c4fd2e5      appstream              74
k
  php-mbstring             x86_64                7.4.19-
1.module_el18.5.0+815+1c4fd2e5      appstream              484
k
  php-xml                  x86_64                7.4.19-
1.module_el18.5.0+815+1c4fd2e5      appstream              174
k
Installing dependencies:
  httpd-filesystem        noarch                2.4.37-
43.module_el18.5.0+1022+b541f3b1      appstream              39
k

```

```
oniguruma                                x86_64                6.8.2-2.el8
appstream                                187 k
Installing module profiles:
  php/common
```

Transaction Summary

```
=====
=====
Install  8 Packages
```

Total download size: 6.3 M

Installed size: 27 M

Downloading Packages:

```
(1/8):                                oniguruma-6.8.2-2.el8.x86_64.rpm
431 kB/s | 187 kB    00:00
(2/8):      httpd-filesystem-2.4.37-43.module_el8.5.0+1022+b541f3b1.noarch.rpm
85 kB/s | 39 kB      00:00
(3/8):                                php-fpm-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64.rpm
6.0 MB/s | 1.6 MB    00:00
(4/8):                                php-cli-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64.rpm
3.9 MB/s | 3.1 MB    00:00
(5/8):                                php-json-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64.rpm
405 kB/s | 74 kB     00:00
(6/8):      php-mbstring-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64.rpm
1.9 MB/s | 484 kB     00:00
(7/8):                                php-xml-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64.rpm
856 kB/s | 174 kB     00:00
(8/8):      php-common-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64.rpm
501 kB/s | 702 kB     00:01
```

Total

```
3.4 MB/s | 6.3 MB    00:01
```

Running transaction check

Transaction check succeeded.

Running transaction test

Transaction test succeeded.

Running transaction

```
  Preparing                                                    :
1/1
  Installing           :  php-common-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
1/8
  Installing           :      oniguruma-6.8.2-2.el8.x86_64
2/8
  Running              scriptlet:      oniguruma-6.8.2-2.el8.x86_64
2/8
  Running              scriptlet:      httpd-filesystem-2.4.37-
43.module_el8.5.0+1022+b541f3b1.noarch
3/8
  Installing           :      httpd-filesystem-2.4.37-
43.module_el8.5.0+1022+b541f3b1.noarch
3/8
  Installing           :  php-fpm-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
4/8
```



```

Running scriptlet: php-fpm-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
4/8
Installing      : php-mbstring-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
5/8
Installing      : php-cli-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
6/8
Installing      : php-json-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
7/8
Installing      : php-xml-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
8/8
Running scriptlet: php-xml-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
8/8
Running scriptlet: php-fpm-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
8/8
Verifying      : httpd-filesystem-2.4.37-
43.module_el8.5.0+1022+b541f3b1.noarch
1/8
Verifying      : oniguruma-6.8.2-2.el8.x86_64
2/8
Verifying      : php-cli-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
3/8
Verifying      : php-common-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
4/8
Verifying      : php-fpm-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
5/8
Verifying      : php-json-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
6/8
Verifying      : php-mbstring-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
7/8
Verifying      : php-xml-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
8/8

Installed:
httpd-filesystem-2.4.37-43.module_el8.5.0+1022+b541f3b1.noarch
oniguruma-6.8.2-2.el8.x86_64
php-cli-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
php-common-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
php-fpm-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
php-json-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
php-mbstring-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64
php-xml-7.4.19-1.module_el8.5.0+815+1c4fd2e5.x86_64

Complete!

```

- Thực hiện kiểm tra PHP sau khi cài đặt

```

[root@tuandq1-pnh2 nginx]# echo "<?php echo 'PHP 7.4 Test Page'.\"\\n\\\"; ?>" >
php_test.php
[root@tuandq1-pnh2 nginx]# php php_test.php
PHP 7.4 Test Page

```

- Thực hiện khởi động lại cấu hình nginx và php

```

[root@tuandq1-pnh2 nginx]# systemctl restart nginx

[root@tuandq1-pnh2 nginx]# systemctl status php-fpm

```

```
* php-fpm.service - The PHP FastCGI Process Manager
   Loaded: loaded (/usr/lib/systemd/system/php-fpm.service; disabled;
   vendor pr>
   Active: active (running) since Thu 2021-04-07 19:42:40 JST; 8s ago
 Main PID: 5646 (php-fpm)
  Status: "Ready to handle connections"
   Tasks: 6 (limit: 23673)
  Memory: 10.3M
   CGroup: /system.slice/php-fpm.service
           +-- 5646 php-fpm: master process (/etc/php-fpm.conf)
           +-- 5654 php-fpm: pool www
           +-- 5655 php-fpm: pool www
           +-- 5656 php-fpm: pool www
           +-- 5657 php-fpm: pool www
           +-- 5658 php-fpm: pool www

   ....
   ....

# create PHPInfo test page

[root@www ~]#
echo '<?php phpinfo(); ?>' > /usr/share/nginx/pnh.com.vn/info.php
```

- Thực hiện cấu hình và kiểm tra sau khi tích hợp nginx và php

Từ trình duyệt gõ đường dẫn sau để kiểm tra: www.pnh.com.vn/info.php