

Лабораторная работа №5

Тема «Расширенная настройка HTTP-сервера Apache»
по дисциплине «Администрирование сетевых подсистем»

Выполнил: Щербак Маргарита Романовна

Студент группы: НПИбд-02-21

«20» ноября 2023г.

Цель работы:

Приобретение практических навыков по расширенному конфигурированию HTTP-сервера Apache в части безопасности и возможности использования PHP.

Задание

1. Сгенерировать криптографический ключ и самоподписанный сертификат безопасности для возможности перехода веб-сервера от работы через протокол HTTP к работе через протокол HTTPS.
2. Настроить веб-сервер для работы с PHP.
3. Написать скрипт для Vagrant, фиксирующий действия по расширенной настройке HTTP-сервера во внутреннем окружении виртуальной машины server.

Конфигурирование HTTP-сервера для работы через протокол HTTPS

[illegible]

Сгенерированные ключ и сертификат появились в соответствующих каталогах /etc/ssl/private и /etc/ssl/certs

[illegible]

```

[+] mc [root@server.mrshcherbak.net]

/etc/ssl/private/thekey
-----BEGIN PRIVATE KEY-----
MIIEvQIBADANBgkqhkiG9w0BAQEEFAASCBKggwSkAgEAAoIBAQQDda8fyz2a1svyU
onHXZqnLPtTKkG2o6+np0j0-uasccQkUYUjXp/gnzdz47MbbxvY2CTVd8NfXREoD
eFzalsTRcpdJz5mmWetTGiwrcBvH4y79KjCRkvbTbxux60/URMEduqUNCXUPr2t
qGPRZtZk3wZvcPnWQ54aztEBPLoRwbwBALPIZ7E4bjh1fjkchpsLahd0Fja/z6i
T3ePtdkL+8anCMCTVFPVZA+ZVWH5VoBwOAV3gc/ePyYAUq+YLTVJ3fJdpm/yUxm52
4LmkEtKlYarqv+nBwXUdLlwdGyKa2KtZ9B0f15X23bH5ZjZoduX9paRbMsG
FgAoQwfnAGMBAEAcgEAJ1K0XYkvfEWBgf+j2w/8MD0gh70XrT1JwMx+10YV3U
WIF9yWNz1F2zeuOWER5SdKqCHee+TWnFTlBg8YYSCH+epmzpuJmMeGkAGcsZSHZjE
NEP347y7BMVKEvKdwn2+aQX54asZBRLtQqt88tPdlWg2b6/HTEDV/SyavWom11Xn
huM5pS42QweyvrJQz8PjR6z0yFvFN/Bsm5yM6icdquzIXa0d7UAJWJvHE9w0
TQtWBehrxcsU+3GNXJiE8p5yAwTnN9VW/IB6vPz2FHba9oXITm6-w0x0979wYkT
dqmpt42rCz19D3xXbDDaVus7JcEw-hs/p4/4SAw0KqGDWUMLH2otJL3K365eg
B8eyT7W3iOoR5/CbDxiA+ivUq9MMX/heS1E3R+j7YChg9pX1UdszeGefdh7rIOo
p05hgwT58AWidotWcZyegYnqG5npxK2G+o+FXxbwOMBTE84C1FCGLXn-JrMaYpWkv
yesXWuUgQj0ufgdIDpXWmG6xRmQDpKIXoX9KmJH48dKcAnnrWuMCA+5gjXsH
KUGuDuYcjG3wXB8PTW4N6+LaTOW319cUv1m2MR4ad3mK0T1/Smnztfc1/yBZh
83fM69r98ZvdvDjUhfCq6c2EwqfP9E3AC9A9Ag4Y1Xyp3BD1mNqZg6mweMr
j3X6ZctbywKAgYaobpEK5M0rc3LWPE=9MT9RQUwegejTfTRhbo/0Nq-Q3yem1Q
DWOP3x4X0kj60T81h7rXiSHvFSzWvD0ER2Qnz60lPAHeH45A373Gpzc0T/cfQoKj
ek3y3JzYfAabpt1d6G6JtLXoNwAIkjlApahrPSvScuHed7Fz2n1jzh2AoGBAN6
L0145M98Bj5wGfG0tUuP2K01RSX4d6TP0/VNReAoXqUpPnHj3Q0Wj99070Bh0F
5swj/PJhKYCg3brSsU9KHXK4P2KJUGkLbdzUHHHOCq7LEm13cF2Z1RAN4GwmI65
NeUb+w9EA5mYdT1FMY3wvTMmQJLbduv7T1mhlAoGABMTy6e7ZANd4GehkZ4L
Dq5K60ygz3NGUluHxhsekh4Vr+jfzl4rY/DY16LJBoZ2GpXa+d+rv03159/JE
o0b7YD/7LdZ7CpFTw7r7hL3JaumiTwdcg4Gz2JwdfaPm9YNI47Z2HZD+E/Y3
szRVnoGMSMVahtVby9jd4cSV
-----END PRIVATE KEY-----

```

```
mc [root@server.mrshcherbak.net]:/etc/httpd/conf.d
/etc/httpd/conf.d/www.mrshcherbak.net.conf 863/863 100%
<VirtualHost *:80>
    ServerAdmin webmaster@mrshcherbak.net
    DocumentRoot /var/www/html/www.mrshcherbak.net
    ServerName www.mrshcherbak.net
    ServerAlias www.mrshcherbak.net
    ErrorLog logs/www.mrshcherbak.net-error_log
    CustomLog logs/www.mrshcherbak.net-access_log common
    RewriteEngine on
    RewriteRule ^(.*)$ https://%{HTTP_HOST}$1 [R=301,L]
</VirtualHost>

<IfModule mod_ssl.c>
<VirtualHost *:443>
    SSLEngine on
    ServerAdmin webmaster@mrshcherbak.net
    DocumentRoot /var/www/html/www.mrshcherbak.net
    ServerName www.mrshcherbak.net
    ServerAlias www.mrshcherbak.net
    ErrorLog logs/www.mrshcherbak.net-error_log
    CustomLog logs/www.mrshcherbak.net-access_log common
    SSLCertificateFile /etc/ssl/certs/www.mrshcherbak.net.crt
    SSLCertificateKeyFile /etc/ssl/private/www.mrshcherbak.net.key
</VirtualHost>
</IfModule>
```

Содержимое файла

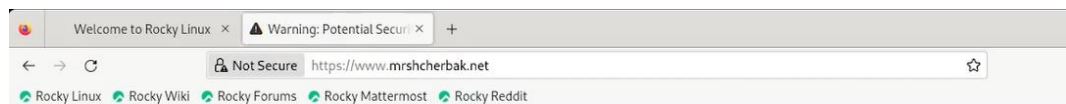
```
/etc/httpd/conf.d/www.mrshcherbak.net.conf
```

Внесла изменения в настройки межсетевого экрана на сервере, разрешив работу с https

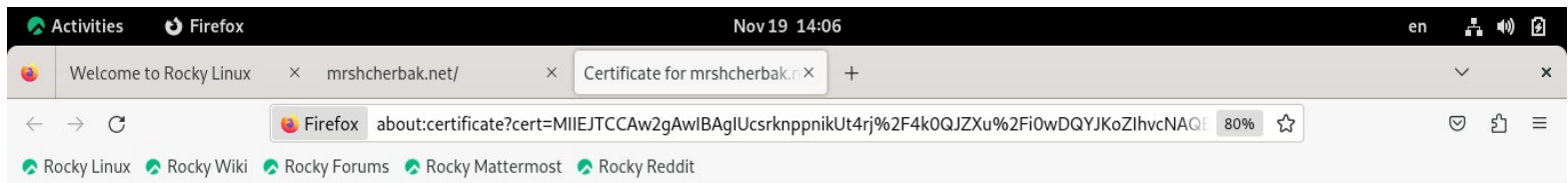
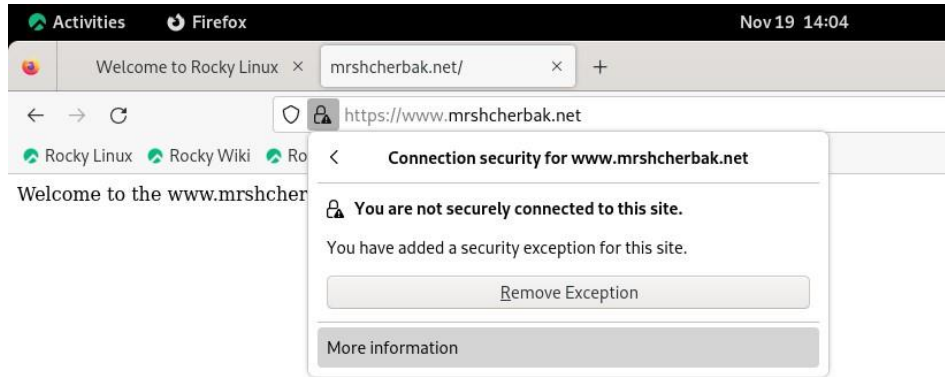
```
root@server:/etc/httpd/conf.d

[root@server.mrshcherbak.net conf.d]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client dns http ssh
[root@server.mrshcherbak.net conf.d]# firewall-cmd --get-services
RH-Satellite-6 RH-Satellite-6-capsule afp amanda-client amanda-k5-client amqp amqps apcupsd audi
t ausweisapp2 bacula bacula-client bb bgp bitcoin bitcoin-rpc bitcoin-testnet bitcoin-testnet-rp
c bittorrent-lsd ceph ceph-mon cfengine checkmk-agent cockpit collectd condor-collector cratedb
ctdb dhcp dhcpv6 dhcpv6-client distcc dns dns-over-tls docker-registry docker-swarm dropbox-lans
ync elasticsearch etcd-client etcd-server finger foreman foreman-proxy freeipa-4 freeipa-ldap fr
eeipa-ldaps freeipa-replication freeipa-trust ftp galera ganglia-client ganglia-master git gpsd
grafana gre high-availability http http3 https ident imap imaps ipfs ipp ipp-client ipsec irc ir
cs iscsi-target isns jellyfin jenkins kadmin kdeconnect kerberos kibana klogin kpasswd kprop ksh
ell kube-api kube-apiserver kube-control-plane kube-control-plane-secure kube-controller-manager
kube-controller-manager-secure kube-nodeport-services kube-scheduler kube-scheduler-secure kube
-worker kubelet kubelet-readonly kubelet-worker ldap ldaps libvirt libvirt-tls lightning-network
llmnr llmnr-tcp llmnr-udp managesieve matrix mdns memcache minidlna mongodb mosh mountd mqtt mq
tt-tls ms-wbt mssql murmur mysql nbd netbios-ns netdata-dashboard nfs nfs3 nmea-0183 nrpe ntp nu
t openvpn ovirt-imageio ovirt-storageconsole ovirt-vmconsole plex pmcd pmproxy pmwebapi pmwebapi
s pop3 pop3s postgresql privoxy prometheus prometheus-node-exporter proxy-dhcp ps3netsrv ptp pul
seaudio puppetmaster quassel radius rdp redis redis-sentinel rpc-bind rquotad rsh rsyncd rtsp sa
lt-master samba samba-client samba-dc sane sip sips slp smtp smtp-submission smtps snmp snmptls
snmptls-trap snmptrap spideroak-lansync spotify-sync squid ssdp ssh steam-streaming svdrp svn sy
ncthing syncthing-gui synergy syslog syslog-tls telnet tentacle tftp tile38 tinc tor-socks trans
mission-client upnp-client vdsml vnc-server wbem-http wbem-https wireguard ws-discovery ws-discov
ery-client ws-discovery-tcp ws-discovery-udp wsman wsmans xdmcp xmpp-bosh xmpp-client xmpp-local
xmpp-server zabbix-agent zabbix-server zerotier
[root@server.mrshcherbak.net conf.d]# firewall-cmd --add-service=https
success
[root@server.mrshcherbak.net conf.d]# firewall-cmd --add-service=https --permanent
success
[root@server.mrshcherbak.net conf.d]# firewall-cmd --reload
success
[root@server.mrshcherbak.net conf.d]#
```

Автоматическое переключение на работу по протоколу HTTPS



Добавление адреса сервера в постоянные исключения и просмотр информации о сертификате



Certificate

mrshcherbak.net	
Subject Name	
Country	RU
State/Province	Russia
Locality	Moscow
Organization	mrshcherbak
Organizational Unit	mrshcherbak
Common Name	mrshcherbak.net
Email Address	mrshcherbak@mrshcherbak.net
Issuer Name	
Country	RU
State/Province	Russia
Locality	Moscow
Organization	mrshcherbak
Organizational Unit	mrshcherbak
Common Name	mrshcherbak.net
Email Address	mrshcherbak@mrshcherbak.net

Конфигурирование HTTP-сервера для работы с PHP

Установка пакетов для работы с PHP

```
root@server:~  
[root@server.mrshcherbak.net ~]# dnf -y install php  
Last metadata expiration check: 0:24:09 ago on Sun 19 Nov 2023 01:43:43 PM UTC.  
Dependencies resolved.  
=====
```

Package	Architecture	Version	Repository	Size
Installing:				
php	x86_64	8.0.30-1.el9_2	appstream	7.7 k
Installing dependencies:				
nginxfilesystem	noarch	1:1.20.1-14.el9_2.1	appstream	8.5 k
php-common	x86_64	8.0.30-1.el9_2	appstream	665 k
Installing weak dependencies:				
php-cli	x86_64	8.0.30-1.el9_2	appstream	3.1 M
php-fpm	x86_64	8.0.30-1.el9_2	appstream	1.6 M
php-mbstring	x86_64	8.0.30-1.el9_2	appstream	468 k
php-opcache	x86_64	8.0.30-1.el9_2	appstream	509 k
php-pdo	x86_64	8.0.30-1.el9_2	appstream	81 k
php-xml	x86_64	8.0.30-1.el9_2	appstream	131 k

```
=====
```

Transaction Summary			
Install 9 Packages			
Total download size: 6.5 M			
Installed size: 35 M			
Downloading Packages:			
(1/9): nginxfilesystem-1.20.1-14.el9_2.1.noarch.rpm	15 kB/s 8.5 kB	00:00	
(2/9): php-pdo-8.0.30-1.el9_2.x86_64.rpm	140 kB/s 81 kB	00:00	
(3/9): php-xml-8.0.30-1.el9_2.x86_64.rpm	218 kB/s 131 kB	00:00	
(4/9): php-opcache-8.0.30-1.el9_2.x86_64.rpm	3.0 MB/s 509 kB	00:00	
(5/9): php-mbstring-8.0.30-1.el9_2.x86_64.rpm	2.5 MB/s 468 kB	00:00	
(6/9): php-common-8.0.30-1.el9_2.x86_64.rpm	2.8 MB/s 665 kB	00:00	

```
mc [root@server.mrshcherbak.net]:/var/www/html/www.mrshcherbak.net  
index.php [----] 2 L: [ 1+ 2 3/ 3] *(19 / 19b) <EOF> [*] [X]  
<?php  
phpinfo();  
?>
```

Содержимое файла index.php

```
[root@server.mrshcherbak.net www.mrshcherbak.net]# chown -R apache:apache /var/www  
[root@server.mrshcherbak.net www.mrshcherbak.net]# restorecon -vR /etc  
Relabeled /etc/sysconfig/network-scripts/ifcfg-eth1 from unconfined_u:object_r:user_tmp_t:s0 to unconfined_u:object_r:net_conf_t:s0  
[root@server.mrshcherbak.net www.mrshcherbak.net]# restorecon -vR /var/www  
[root@server.mrshcherbak.net www.mrshcherbak.net]# systemctl restart httpd  
[root@server.mrshcherbak.net www.mrshcherbak.net]#
```


Страница с информацией об используемой на веб-сервере версии PHP


Activities Firefox Nov 19 14:19 en

PHP 8.0.30 - phpinfo()

https://www.mrshcherbak.net 80%

Rocky Linux Rocky Wiki Rocky Forums Rocky Mattermost Rocky Reddit

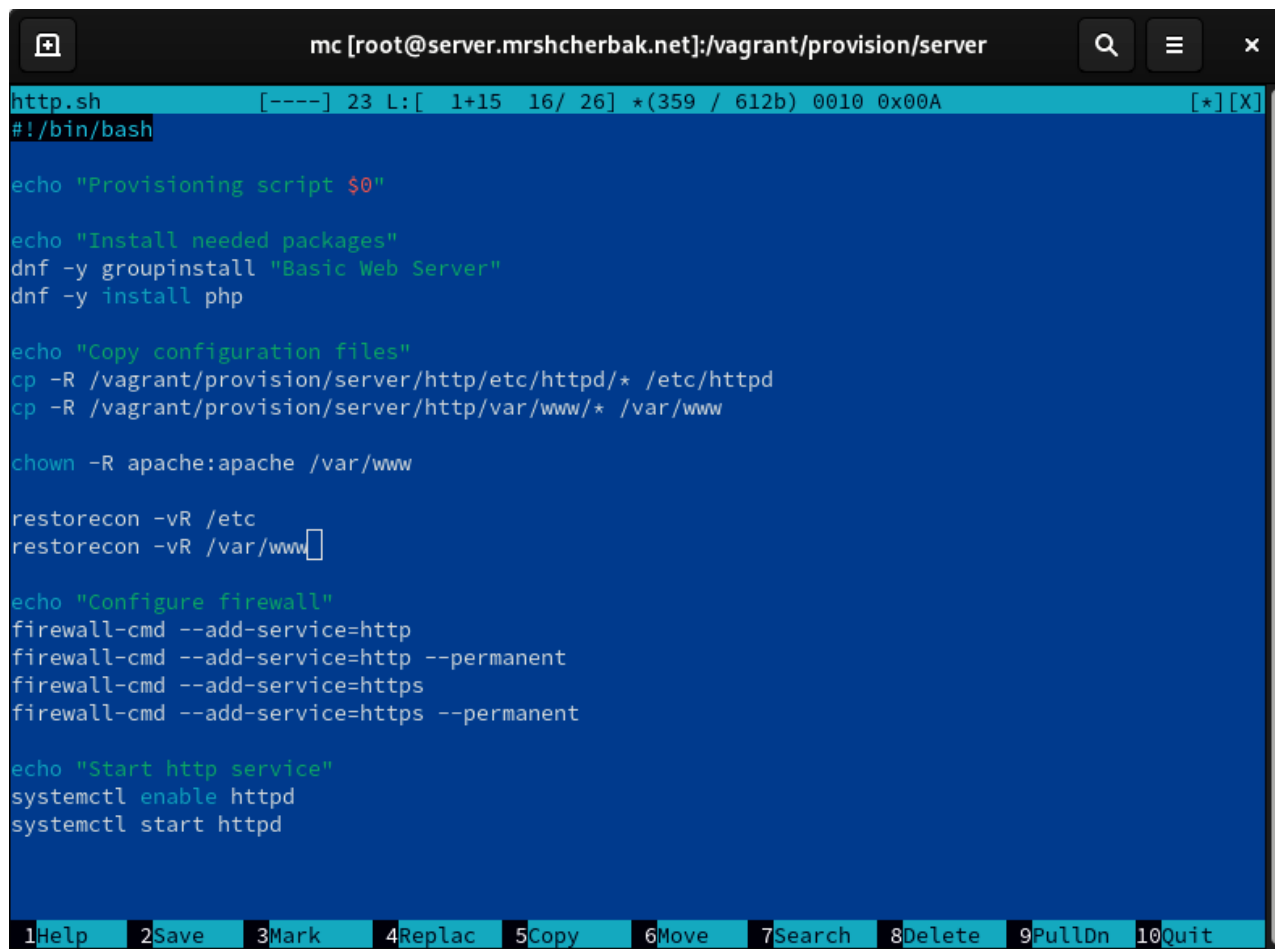
PHP Version 8.0.30



System	Linux server.mrshcherbak.net 5.14.0-284.30.1.el9_2.x86_64 #1 SMP PREEMPT_DYNAMIC Sat Sep 16 09:55:41 UTC 2023 x86_64
Build Date	Aug 3 2023 17:13:08
Build System	Rocky Linux release 9.2 (Blue Onyx)
Build Provider	Rocky Enterprise Software Foundation
Compiler	gcc (GCC) 11.3.1 20221121 (Red Hat 11.3.1-4)
Architecture	x86_64
Server API	FPM/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d
Additional .ini files parsed	/etc/php.d/10-opcache.ini, /etc/php.d/20-bz2.ini, /etc/php.d/20-calendar.ini, /etc/php.d/20-ctype.ini, /etc/php.d/20-curl.ini, /etc/php.d/20-dom.ini, /etc/php.d/20-exif.ini, /etc/php.d/20-fileinfo.ini, /etc/php.d/20-ftp.ini, /etc/php.d/20-gettext.ini, /etc/php.d/20-iconv.ini, /etc/php.d/20-mbstring.ini, /etc/php.d/20-pdo.ini, /etc/php.d/20-phar.ini, /etc/php.d/20-simplexml.ini, /etc/php.d/20-sockets.ini, /etc/php.d/20-sqlite3.ini, /etc/php.d/20-tokenizer.ini, /etc/php.d/20-xml.ini, /etc/php.d/20-xmlwriter.ini, /etc/php.d/20-xsl.ini, /etc/php.d/30-pdo_sqlite.ini, /etc/php.d/30-xmlreader.ini
PHP API	20200930
PHP Extension	20200930
Zend Extension	420200930
Zend Extension Build	API20200930.NTS
PHP Extension Build	API20200930.NTS
Debug Build	no

Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.mrshcherbak.net conf.d]# cp -R /etc/httpd/conf.d/* /vagrant/provision/server/http/etc/httpd/conf.d
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/autoindex.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/fcgid.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/manual.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/php.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/README'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/server.mrshcherbak.net.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/ssl.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/userdir.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/welcome.conf'? y
cp: overwrite '/vagrant/provision/server/http/etc/httpd/conf.d/www.mrshcherbak.net.conf'? y
[root@server.mrshcherbak.net conf.d]# cp -R /var/www/html/* /vagrant/provision/server/http/var/www/html
cp: overwrite '/vagrant/provision/server/http/var/www/html/server.mrshcherbak.net/index.html'? y
cp: overwrite '/vagrant/provision/server/http/var/www/html/www.mrshcherbak.net/index.php'? y
[root@server.mrshcherbak.net conf.d]# mkdir -p /vagrant/provision/server/http/etc/pki/tls/private
[root@server.mrshcherbak.net conf.d]# mkdir -p /vagrant/provision/server/http/etc/pki/tls/certs
[root@server.mrshcherbak.net conf.d]# cp -R /etc/pki/tls/private/www.mrshcherbak.net.key /vagrant/provision/server/http/etc/pki/tls/private
cp: overwrite '/vagrant/provision/server/http/etc/pki/tls/private/www.mrshcherbak.net.key'? y
[root@server.mrshcherbak.net conf.d]# cp -R /etc/pki/tls/certs/www.mrshcherbak.net.crt /vagrant/provision/server/http/etc/pki/tls/certs
cp: overwrite '/vagrant/provision/server/http/etc/pki/tls/certs/www.mrshcherbak.net.crt'? y
[root@server.mrshcherbak.net conf.d]#
```



```
mc [root@server.mrshcherbak.net]:/vagrant/provision/server
http.sh [----] 23 L: [ 1+15 16/ 26] *(359 / 612b) 0010 0x00A [*][X]
#!/bin/bash

echo "Provisioning script $0"

echo "Install needed packages"
dnf -y groupinstall "Basic Web Server"
dnf -y install php

echo "Copy configuration files"
cp -R /vagrant/provision/server/http/etc/httpd/* /etc/httpd
cp -R /vagrant/provision/server/http/var/www/* /var/www

chown -R apache:apache /var/www

restorecon -vR /etc
restorecon -vR /var/www

echo "Configure firewall"
firewall-cmd --add-service=http
firewall-cmd --add-service=http --permanent
firewall-cmd --add-service=https
firewall-cmd --add-service=https --permanent

echo "Start http service"
systemctl enable httpd
systemctl start httpd
```

1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9PullDn 10Quit

Вывод: таким образом, в ходе выполнения л/р №5, я приобрела практические навыки по расширенному конфигурированию HTTP-сервера Apache в части безопасности и возможности использования PHP.