

Лабораторная работа №4

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

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Цель работы:

Приобретение практических навыков по установке и базовому конфигурированию HTTP-сервера Apache.

Задание

1. Установить необходимые для работы HTTP-сервера пакеты.
2. Запустить HTTP-сервер с базовой конфигурацией и проанализировать его работу.
3. Настроить виртуальный хостинг.
4. Написать скрипт для Vagrant, фиксирующий действия по установке и настройке HTTP-сервера во внутреннем окружении виртуальной машины `server`. Соответствующим образом внести изменения в Vagrantfile.

Выполнение работы

Установка HTTP-сервера

```
Activities Terminal

[mrshcherbak@server.mrshcherbak.net ~]$ sudo -i
[sudo] password for mrshcherbak:
[root@server.mrshcherbak.net ~]# LANG=C yum grouplist
Last metadata expiration check: 2:37:39 ago on Sun Nov 12 12:23:35 2023.
Available Environment Groups:
  Server
  Minimal Install
  Workstation
  KDE Plasma Workspaces
  Custom Operating System
  Virtualization Host
Installed Environment Groups:
  Server with GUI
Installed Groups:
  Container Management
  Development Tools
  Headless Management
Available Groups:
  Fedora Packager
  Xfce
  Legacy UNIX Compatibility
  Console Internet Tools
  .NET Development
  Graphical Administration Tools
  Network Servers
  RPM Development Tools
  Scientific Support
  Security Tools
  Smart Card Support
  System Tools
[root@server.mrshcherbak.net ~]# dnf -y groupinstall "Basic Web Server"
Last metadata expiration check: 2:37:59 ago on Sun 12 Nov 2023 12:23:35 PM UTC.
Dependencies resolved.
=====
Package           Arch      Version      Repository      Size
=====
Installing group/module packages:
httpd             x86_64    2.4.53-11.el9_2.5    appstream      47 k
httpd-manual      noarch    2.4.53-11.el9_2.5    appstream      2.2 M
mod_fcgid         x86_64    2.3.9-28.el9        appstream       74 k
mod_ssl           x86_64    1:2.4.53-11.el9_2.5  appstream     110 k
```

```
C:\Work\mrshcherbak\vagrant>vagrant up server
Bringing machine 'server' up with 'virtualbox' provider...
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: You assigned a static IP ending in ".1" to this machine.
==> server: This is very often used by the router and can cause the
==> server: network to not work properly. If the network doesn't work
==> server: properly, try changing this IP.
==> server: Clearing any previously set forwarded ports...
==> server: Clearing any previously set network interfaces...
==> server: Preparing network interfaces based on configuration...
server: Adapter 1: nat
server: Adapter 2: intnet
==> server: Forwarding ports...
server: 22 (guest) => 2222 (host) (adapter 1)
==> server: Running 'pre-boot' VM customizations...
==> server: Booting VM...
==> server: Waiting for machine to boot. This may take a few minutes...
server: SSH address: 127.0.0.1:2222
server: SSH username: vagrant
server: SSH auth method: password
```

Базовое конфигурирование HTTP-сервера

Просмотрела содержание конфигурационных файлов в каталогах /etc/httpd/conf и /etc/httpd/conf.d

```
Activities Terminal
mc [root@ser

/etc/httpd/conf/httpd.conf
# Relax access to content within /var/www.
#
<Directory "/var/www">
    AllowOverride None
    # Allow open access:
    Require all granted
</Directory>

# Further relax access to the default document root:
<Directory "/var/www/html">
    #
    # Possible values for the Options directive are "None", "All",
    # or any combination of:
    #   Indexes Includes FollowSymLinks SymLinksifOwnerMatch ExecCGI MultiViews
    #
    # Note that "MultiViews" must be named *explicitly* --- "Options All"
    # doesn't give it to you.
    #
    # The Options directive is both complicated and important. Please see
    # http://httpd.apache.org/docs/2.4/mod/core.html#options
    # for more information.
    #
    Options Indexes FollowSymLinks

    #
    # AllowOverride controls what directives may be placed in .htaccess files.
    # It can be "All", "None", or any combination of the keywords:
    #   Options FileInfo AuthConfig Limit
    #
    AllowOverride None

    #
    # Controls who can get stuff from this server.
    #
    Require all granted
</Directory>

#
# DirectoryIndex: sets the file that Apache will serve if a directory
```

```
Activities Terminal
mc [root

/etc/httpd/conf.d/autoindex.conf
#
# Directives controlling the display of server-generated directory listings.
#
# Required modules: mod_authz_core, mod_authz_host,
#                   mod_autoindex, mod_alias
#
# To see the listing of a directory, the Options directive for the
# directory must include "Indexes", and the directory must not contain
# a file matching those listed in the DirectoryIndex directive.
#
#
# IndexOptions: Controls the appearance of server-generated directory
# listings.
#
IndexOptions FancyIndexing HTMLTable VersionSort

# We include the /icons/ alias for FancyIndexed directory listings. If
# you do not use FancyIndexing, you may comment this out.
#
Alias /icons/ "/usr/share/httpd/icons/"

<Directory "/usr/share/httpd/icons">
    Options Indexes MultiViews FollowSymLinks
    AllowOverride None
    Require all granted
</Directory>

#
# AddIcon* directives tell the server which icon to show for different
# files or filename extensions. These are only displayed for
# FancyIndexed directories.
#
AddIconByEncoding (CMP,/icons/compressed.gif) x-compress x-gzip

AddIconByType (TXT,/icons/text.gif) text/*
AddIconByType (IMG,/icons/image2.gif) image/*
AddIconByType (SND,/icons/sound2.gif) audio/*
AddIconByType (VID,/icons/movie.gif) video/*
```

```
Activities Terminal
mc [root@s

/etc/httpd/conf.d/fcgid.conf
# This is the Apache server configuration file for providing FastCGI support
# through mod_fcgid
#
# Documentation is available at
# http://httpd.apache.org/mod_fcgid/mod/mod_fcgid.html
#
# Use FastCGI to process .fcg .fcgi & .fpl scripts
AddHandler fcgid-script fcgi fcgi fpl
#
# Sane place to put sockets and shared memory file
FcgidIPCDir /run/mod_fcgid
FcgidProcessTableFile /run/mod_fcgid/fcgid_shm
```

```
Activities Terminal Nov 12
mc [root@server.mrshcher

/etc/httpd/conf.d/manual.conf
#
# This configuration file allows the manual to be accessed at
# http://localhost/manual/
#
Alias /manual /usr/share/httpd/manual
<Directory "/usr/share/httpd/manual">
    Options Indexes
    AllowOverride None
    Require all granted

    RedirectMatch 301 ^/manual/(?:da|de|en|es|fr|ja|ko|pt-br|ru|tr|zh-cn)(/.*)$ "/manual$1"
</Directory>
```

```
Activities Terminal Nov 12
mc [root@server.mrshcher

/etc/httpd/conf.d/welcome.conf
#
# This configuration file enables the default "Welcome" page if there
# is no default index page present for the root URL. To disable the
# Welcome page, comment out all the lines below.
#
# NOTE: if this file is removed, it will be restored on upgrades.
#
<LocationMatch "^/+>">
    Options -Indexes
    ErrorDocument 403 /.noindex.html
</LocationMatch>

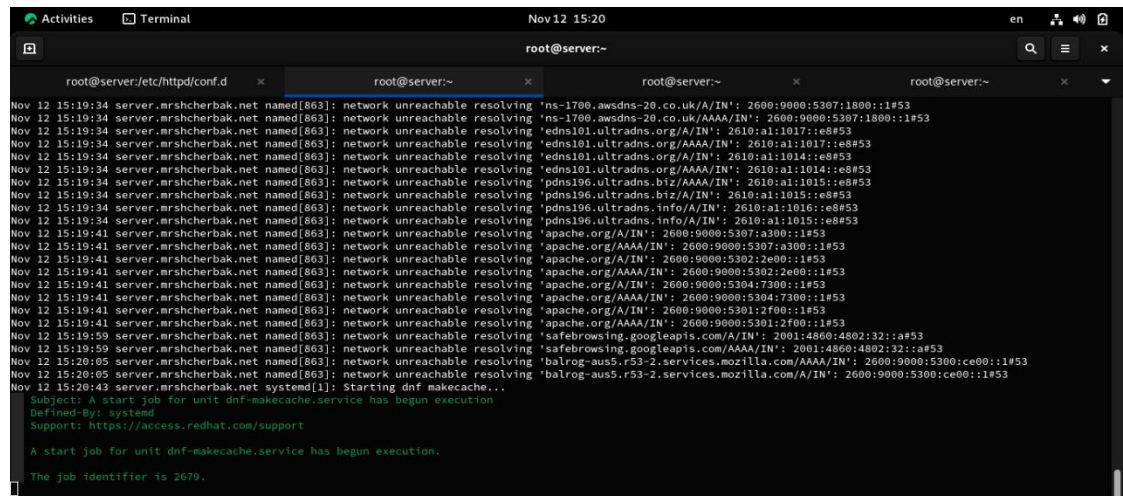
<Directory /usr/share/httpd/noindex>
    AllowOverride None
    Require all granted
</Directory>

Alias /.noindex.html /usr/share/httpd/noindex/index.html
Alias /poweredby.png /usr/share/httpd/icons/apache_pb3.png
Alias /system_noindex_logo.png /usr/share/httpd/icons/system_noindex_logo.png
```


Внесла изменения в настройки межсетевого экрана узла server, разрешив работу с http

```
[root@server.mrshcherbak.net conf.d]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client dns 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 apcup
sd audit ausweisapp2 bacula bacula-client bb bgp bitcoin bitcoin-rpc bitcoin-testnet bitc
oin-testnet-rpc bittorrent-lsd ceph ceph-mon cfengine checkmk-agent cockpit collectd cond
or-collector cratedb ctdb dhcp dhcpv6 dhcpv6-client distcc dns dns-over-tls docker-regist
ry docker-swarm dropbox-lansync elasticsearch etcd-client etcd-server finger foreman fore
man-proxy freeipa-4 freeipa-ldap freeipa-ldaps freeipa-replication freeipa-trust ftp gale
ra ganglia-client ganglia-master git gpsd grafana gre high-availability http http3 https
ident imap imaps ipfs ipp ipp-client ipsec irc ircs iscsi-target isns jellyfin jenkins ka
dmin kdeconnect kerberos kibana klogin kpasswd kprop kshell kube-api kube-apiserver kube-
control-plane kube-control-plane-secure kube-controller-manager kube-controller-manager-s
ecure kube-nodeport-services kube-scheduler kube-scheduler-secure kube-worker kubelet kub
elet-readonly kubelet-worker ldap ldaps libvirt libvirt-tls lightning-network llmnr llmnr
-tcp llmnr-udp managesieve matrix mdns memcache minidlna mongodb mosh mountd mqtt mqtt-tl
s ms-wbt mssql murmur mysql nbd netbios-ns netdata-dashboard nfs nfs3 nmea-0183 nrpe ntp
nut openvpn ovirt-imageio ovirt-storageconsole ovirt-vmconsole plex pmcd pmproxy pmwebapi
pmwebapis pop3 pop3s postgresql privoxy prometheus prometheus-node-exporter proxy-dhcp p
s3netshr ptp pulseaudio puppetmaster quassel radius rdp redis redis-sentinel rpc-bind rqu
otad rsh rsyncd rtsp salt-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 syncthing syncthing-gui synergy syslog syslog-tls teln
et tentacle tftp tile38 tinc tor-socks transmission-client upnp-client vdsm vnc-server wb
em-http wbem-https wireguard ws-discovery ws-discovery-client ws-discovery-tcp ws-discove
ry-udp wsmann wsmans xdmcp xmpp-bosh xmpp-client xmpp-local xmpp-server zabbix-agent zabbix
x-server zerotier
[root@server.mrshcherbak.net conf.d]# firewall-cmd --add-service=http
success
[root@server.mrshcherbak.net conf.d]# firewall-cmd --add-service=http --permanent
success
[root@server.mrshcherbak.net conf.d]#
```

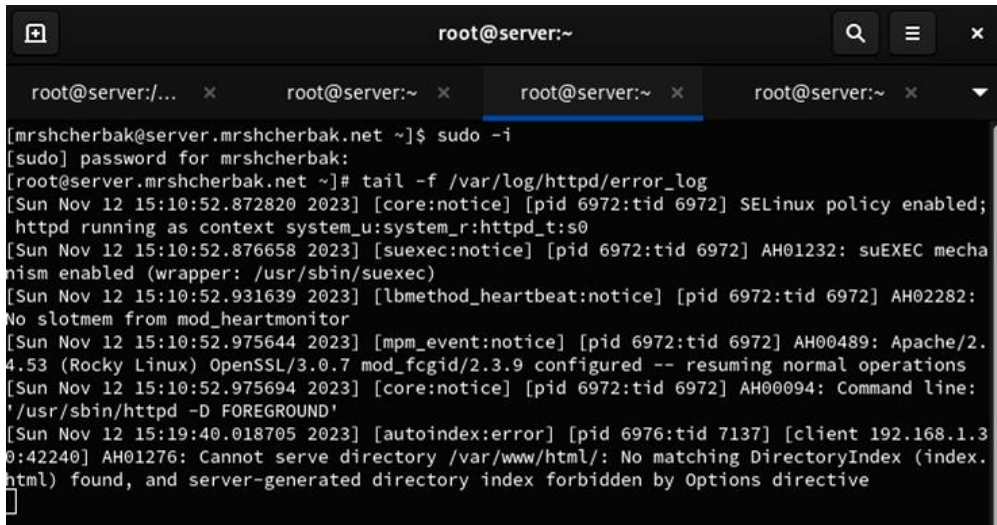
Запуск в режиме реального времени
расширенного лога системных сообщений



```
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'ns-1700.awsdns-20.co.uk/A/IN': 2600:9000:5307:1800::1#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'ns-1700.awsdns-20.co.uk/AAAA/IN': 2600:9000:5307:1800::1#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'edns101.ultradns.org/A/IN': 2610:a1:1017:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'edns101.ultradns.org/AAAA/IN': 2610:a1:1017:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'edns101.ultradns.org/A/IN': 2610:a1:1014:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'edns101.ultradns.org/AAAA/IN': 2610:a1:1014:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'pdns196.ultradns.biz/AAAA/IN': 2610:a1:1015:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'pdns196.ultradns.biz/A/IN': 2610:a1:1015:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'pdns196.ultradns.info/A/IN': 2610:a1:1016:e8#53
Nov 12 15:19:34 server.mrshcherbak.net named[863]: network unreachable resolving 'pdns196.ultradns.info/A/IN': 2610:a1:1015:e8#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/A/IN': 2600:9000:5307:a300:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/AAAA/IN': 2600:9000:5307:a300:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/A/IN': 2600:9000:5302:2400:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/AAAA/IN': 2600:9000:5302:2400:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/A/IN': 2600:9000:5304:7300:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/AAAA/IN': 2600:9000:5304:7300:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/A/IN': 2600:9000:5301:2f00:1#53
Nov 12 15:19:41 server.mrshcherbak.net named[863]: network unreachable resolving 'apache.org/AAAA/IN': 2600:9000:5301:2f00:1#53
Nov 12 15:19:59 server.mrshcherbak.net named[863]: network unreachable resolving 'safebrowsing.googleapis.com/A/IN': 2001:4860:4802:32::a#53
Nov 12 15:19:59 server.mrshcherbak.net named[863]: network unreachable resolving 'safebrowsing.googleapis.com/AAAA/IN': 2001:4860:4802:32::a#53
Nov 12 15:20:05 server.mrshcherbak.net named[863]: network unreachable resolving 'balrog-aus5.r53-2.services.mozilla.com/AAAA/IN': 2600:9000:5300:ce00:1#53
Nov 12 15:20:05 server.mrshcherbak.net named[863]: network unreachable resolving 'balrog-aus5.r53-2.services.mozilla.com/A/IN': 2600:9000:5300:ce00:1#53
Subject: A start job for unit dnf-makecache.service has begun execution
Defined-By: systemd
Support: https://access.redhat.com/support
A start job for unit dnf-makecache.service has begun execution.
The job identifier is 2679.
```

Анализ работы HTTP-сервера

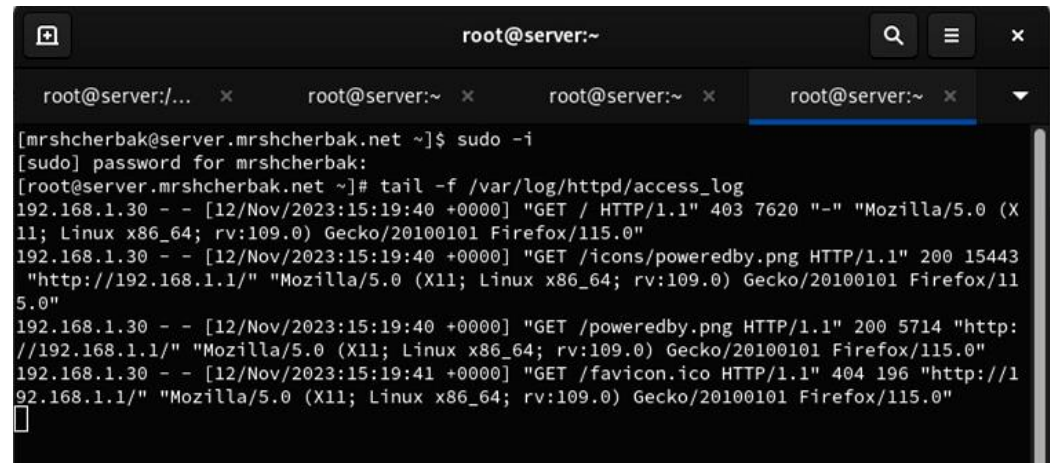
```
C:\Work\mrshcherbak\ vagrant>vagrant up client
Bringing machine 'client' up with 'virtualbox' provider...
==> client: Clearing any previously set forwarded ports...
==> client: Fixed port collision for 22 => 2222. Now on port 2200.
==> client: Clearing any previously set network interfaces...
==> client: Preparing network interfaces based on configuration...
      client: Adapter 1: nat
      client: Adapter 2: intnet
```

A terminal window titled 'root@server:~' with four tabs. The active tab shows the output of 'tail -f /var/log/httpd/error_log'. The logs show SELinux policy enabled, suEXEC mechanism enabled, and a 500 error message: 'AH01276: Cannot serve directory /var/www/html/: No matching DirectoryIndex (index.html) found, and server-generated directory index forbidden by Options directive'.

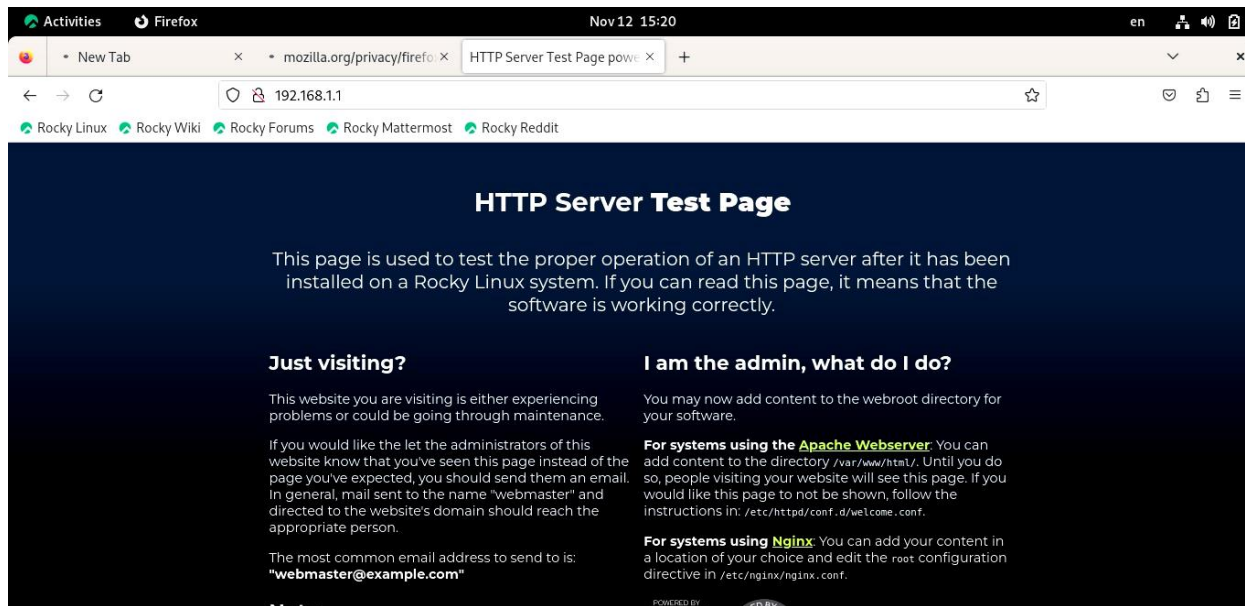
```
root@server:/... x root@server:~ x root@server:~ x root@server:~ x
[mrshcherbak@server.mrshcherbak.net ~]$ sudo -i
[sudo] password for mrshcherbak:
[root@server.mrshcherbak.net ~]# tail -f /var/log/httpd/error_log
[Sun Nov 12 15:10:52.872820 2023] [core:notice] [pid 6972:tid 6972] SELinux policy enabled;
httpd running as context system_u:system_r:httpd_t:s0
[Sun Nov 12 15:10:52.876658 2023] [suexec:notice] [pid 6972:tid 6972] AH01232: suEXEC mecha
nism enabled (wrapper: /usr/sbin/suexec)
[Sun Nov 12 15:10:52.931639 2023] [lbmethod_heartbeat:notice] [pid 6972:tid 6972] AH02282:
No slotmem from mod_heartbeat
[Sun Nov 12 15:10:52.975644 2023] [mpm_event:notice] [pid 6972:tid 6972] AH00489: Apache/2.
4.53 (Rocky Linux) OpenSSL/3.0.7 mod_fcgid/2.3.9 configured -- resuming normal operations
[Sun Nov 12 15:10:52.975694 2023] [core:notice] [pid 6972:tid 6972] AH00094: Command line:
'/usr/sbin/httpd -D FOREGROUND'
[Sun Nov 12 15:19:40.018705 2023] [autoindex:error] [pid 6976:tid 7137] [client 192.168.1.3
0:42240] AH01276: Cannot serve directory /var/www/html/: No matching DirectoryIndex (index.
html) found, and server-generated directory index forbidden by Options directive
```

Просмотр лога ошибок работы
веб-сервера

Мониторинг доступа к веб-серверу

A terminal window titled 'root@server:~' with four tabs. The active tab shows the output of 'tail -f /var/log/httpd/access_log'. The logs show successful GET requests for /, /icons/poweredby.png, and /poweredby.png, and a 404 error for /favicon.ico.

```
root@server:/... x root@server:~ x root@server:~ x root@server:~ x
[mrshcherbak@server.mrshcherbak.net ~]$ sudo -i
[sudo] password for mrshcherbak:
[root@server.mrshcherbak.net ~]# tail -f /var/log/httpd/access_log
192.168.1.30 - - [12/Nov/2023:15:19:40 +0000] "GET / HTTP/1.1" 403 7620 "-" "Mozilla/5.0 (X
11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/115.0"
192.168.1.30 - - [12/Nov/2023:15:19:40 +0000] "GET /icons/poweredby.png HTTP/1.1" 200 15443
"http://192.168.1.1/" "Mozilla/5.0 (X11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/11
5.0"
192.168.1.30 - - [12/Nov/2023:15:19:40 +0000] "GET /poweredby.png HTTP/1.1" 200 5714 "http:
//192.168.1.1/" "Mozilla/5.0 (X11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/115.0"
192.168.1.30 - - [12/Nov/2023:15:19:41 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://1
92.168.1.1/" "Mozilla/5.0 (X11; Linux x86_64; rv:109.0) Gecko/20100101 Firefox/115.0"
```

Настройка виртуального хостинга для HTTP-сервера

```
mc [root@server.mrshcherbak.net]:/var/named/master/fz
mc [root@server.mrshcherbak.net]:/var/... x root@server:~ x
mrshcherbak.net [-----] 43 L: [ 1+20 21/ 21] *(537 / 537b) <E0F> [*] [X]
$ORIGIN .
$TTL 86400<----->; 1 day
mrshcherbak.net<----->IN SOA<----->mrshcherbak.net. server.mrshcherbak.net. (
<-----><-----><-----><----->2023111204 ; serial
<-----><-----><-----><----->86400 ; refresh (1 day)
<-----><-----><-----><----->3600 ; retry (1 hour)
<-----><-----><-----><----->604800 ; expire (1 week)
<-----><-----><-----><----->10800 ; minimum (3 hours)
<-----><-----><-----><----->)
<-----><-----><-----><----->NS<----->mrshcherbak.net.
<-----><-----><-----><----->A<----->192.168.1.1
$ORIGIN mrshcherbak.net.
$TTL 300<----->; 5 minutes
client<-----><-----><-----><----->A<----->192.168.1.30
<-----><-----><-----><----->TXT<----->"319dbcc0f588d0231ecbabcb3238b043d"
$TTL 86400<----->; 1 day
dhcp<-----><-----><-----><----->A<----->192.168.1.1
ns<-----><-----><-----><----->A<----->192.168.1.1
server<-----><-----><-----><----->A<----->192.168.1.1
server<-----><-----><-----><----->A<----->192.168.1.1
www<-----><-----><-----><----->A<----->192.168.1.1
1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9PullDn 10Quit
```

Редактирование файла прямой DNS-зоны
/var/named/master/fz/mrshcherbak.net

Редактирование файла обратной DNS-зоны /var/named/master/rz/192.168.1

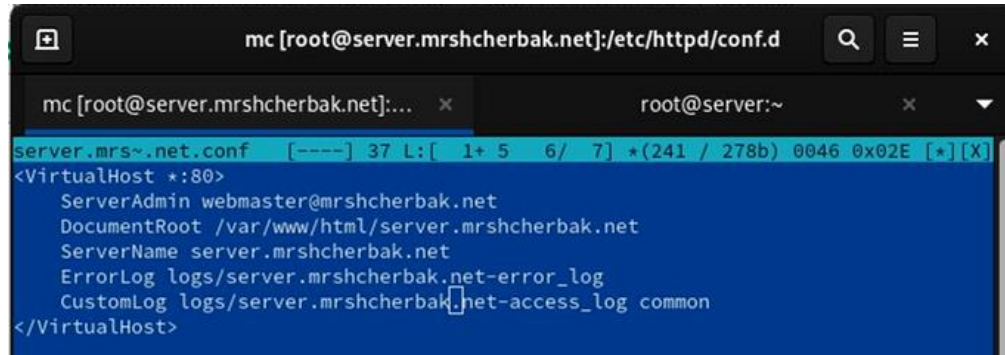
```
mc [root@server.mrshcherbak.net]:/var/named/master/rz
/var/named/master/rz/192.168.1 584/584 100%
$ORIGIN .
$TTL 86400 ; 1 day
1.168.192.in-addr.arpa IN SOA 1.168.192.in-addr.arpa. server.mrshcherbak.net. (
2023111203 ; serial
86400 ; refresh (1 day)
3600 ; retry (1 hour)
604800 ; expire (1 week)
10800 ; minimum (3 hours)
)
NS 1.168.192.in-addr.arpa.
A 192.168.1.1
PTR server.mrshcherbak.net.
$ORIGIN 1.168.192.in-addr.arpa.
1 PTR server.mrshcherbak.net.
PTR ns.mrshcherbak.net.
PTR dhcp.mrshcherbak.net.
$TTL 300 ; 5 minutes
30 PTR client.mrshcherbak.net.
1 PTR server.mrshcherbak.net.
1 PTR www.mrshcherbak.net.
```

```
mc [root@server.mrshcherbak.net]:/var/named/master/fz
Delete
Delete file
"mrshcherbak.net.jnl"?
[ Yes ] [ No ]
```

```
mc [root@server.mrshcherbak.net]:/var/named/master/rz
Delete
Delete file
"192.168.1.jnl"?
[ Yes ] [ No ]
```

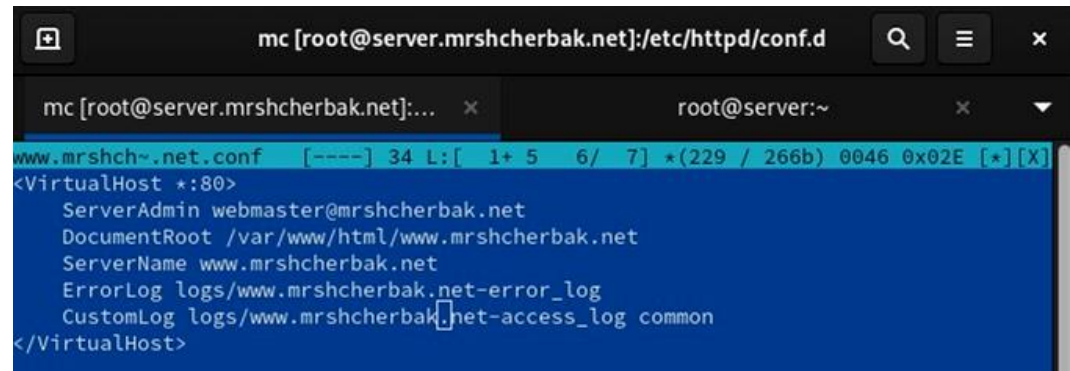
Удалила файлы журналов DNS: mrshcherbak.net.jnl
и 192.168.1.jnl

```
[root@server.mrshcherbak.net ~]# systemctl start named
[root@server.mrshcherbak.net ~]# cd /etc/httpd/conf.d
[root@server.mrshcherbak.net conf.d]# touch server.mrshcherbak.net.conf
[root@server.mrshcherbak.net conf.d]# touch www.mrshcherbak.net.conf
```



The screenshot shows a terminal window with a title bar that reads "mc [root@server.mrshcherbak.net]:/etc/httpd/conf.d". There are two tabs: "mc [root@server.mrshcherbak.net]:..." and "root@server:~". The active tab shows the contents of "server.mrs~.net.conf", which is a VirtualHost configuration for *:80. The configuration includes ServerAdmin, DocumentRoot, ServerName, ErrorLog, and CustomLog directives.

```
server.mrs~.net.conf [----] 37 L:[ 1+ 5 6/ 7] *(241 / 278b) 0046 0x02E [*][X]
<VirtualHost *:80>
  ServerAdmin webmaster@mrshcherbak.net
  DocumentRoot /var/www/html/server.mrshcherbak.net
  ServerName server.mrshcherbak.net
  ErrorLog logs/server.mrshcherbak.net-error_log
  CustomLog logs/server.mrshcherbak.net-access_log common
</VirtualHost>
```

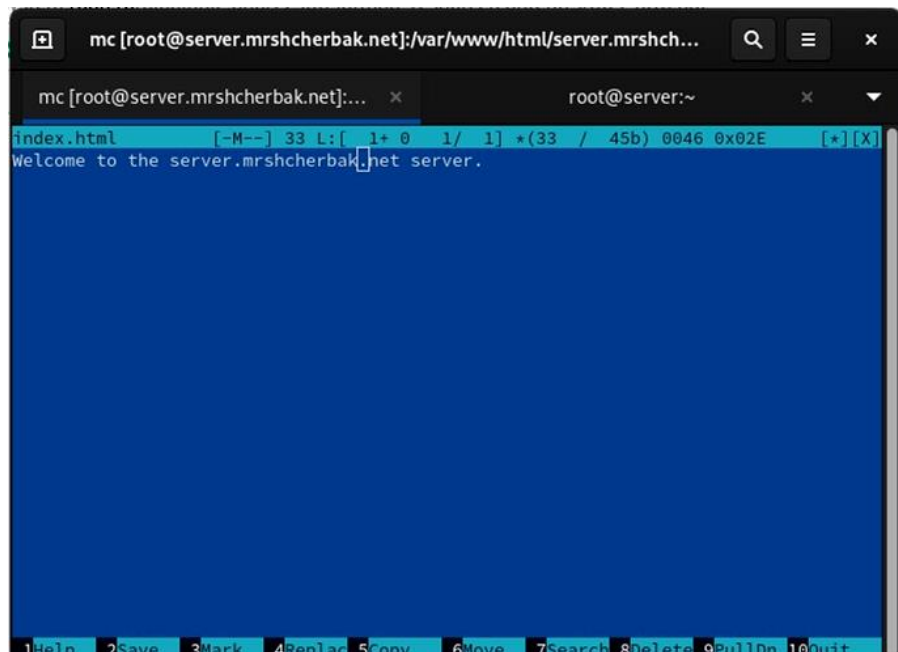


The screenshot shows a terminal window with a title bar that reads "mc [root@server.mrshcherbak.net]:/etc/httpd/conf.d". There are two tabs: "mc [root@server.mrshcherbak.net]:..." and "root@server:~". The active tab shows the contents of "www.mrshch~.net.conf", which is a VirtualHost configuration for *:80. The configuration includes ServerAdmin, DocumentRoot, ServerName, ErrorLog, and CustomLog directives.

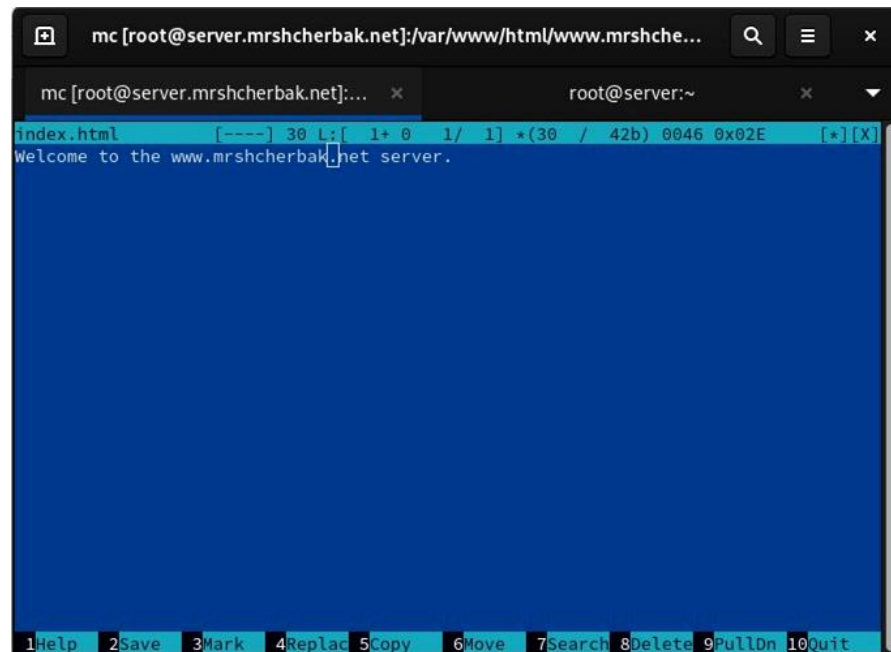
```
www.mrshch~.net.conf [----] 34 L:[ 1+ 5 6/ 7] *(229 / 266b) 0046 0x02E [*][X]
<VirtualHost *:80>
  ServerAdmin webmaster@mrshcherbak.net
  DocumentRoot /var/www/html/www.mrshcherbak.net
  ServerName www.mrshcherbak.net
  ErrorLog logs/www.mrshcherbak.net-error_log
  CustomLog logs/www.mrshcherbak.net-access_log common
</VirtualHost>
```

```
[root@server.mrshcherbak.net conf.d]# cd /var/www/html
[root@server.mrshcherbak.net html]# mkdir server.mrshcherbak.net
[root@server.mrshcherbak.net html]# cd /var/www/html/server.mrshcherbak.net
[root@server.mrshcherbak.net server.mrshcherbak.net]# touch index.html
[root@server.mrshcherbak.net server.mrshcherbak.net]# mc

[root@server.mrshcherbak.net server.mrshcherbak.net]# cd /var/www/html
[root@server.mrshcherbak.net html]# mkdir www.mrshcherbak.net
[root@server.mrshcherbak.net html]# cd /var/www/html/www.mrshcherbak.net
[root@server.mrshcherbak.net www.mrshcherbak.net]# touch index.html
[root@server.mrshcherbak.net www.mrshcherbak.net]#
```



The screenshot shows a web browser window with the address bar displaying 'mc [root@server.mrshcherbak.net]:/var/www/html/server.mrshch...'. The main content area shows a blue background with the text 'Welcome to the server.mrshcherbak.net server.' The browser's status bar at the bottom shows various icons and a menu with options like Help, Save, Mark, Replace, Copy, Move, Search, Delete, PullDn, and Quit.

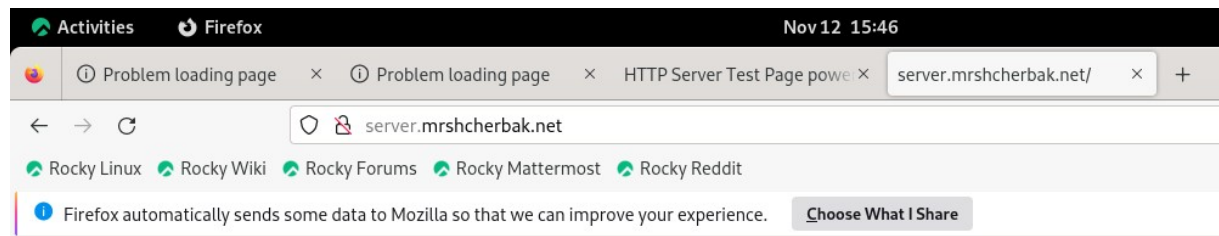


The screenshot shows a web browser window with the address bar displaying 'mc [root@server.mrshcherbak.net]:/var/www/html/www.mrshche...'. The main content area shows a blue background with the text 'Welcome to the www.mrshcherbak.net server.' The browser's status bar at the bottom shows various icons and a menu with options like Help, Save, Mark, Replace, Copy, Move, Search, Delete, PullDn, and Quit.

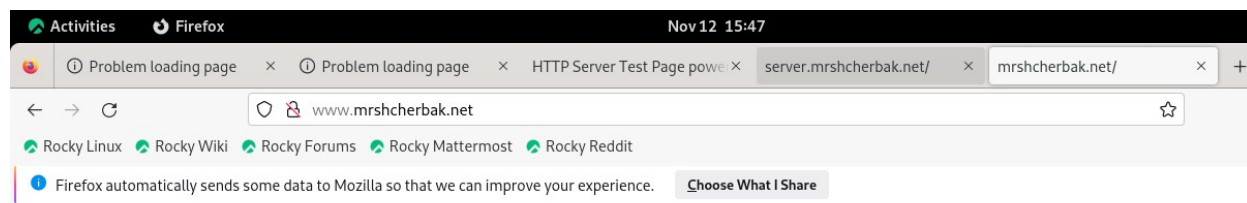
Скорректировала права доступа в каталог с веб-контентом с помощью команды `chown -R apache:apache /var/www`. Восстановила контекст безопасности в SELinux и перезапустила HTTP-сервер.

```
[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/named
[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]#
```


На виртуальной машине client убедилась в корректном доступе к веб-серверу по адресам server.mrshcherbak.net и www.mrshcherbak.net



Welcome to the server.mrshcherbak.net server.



Welcome to the www.mrshcherbak.net server.

Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.mrshcherbak.net www.mrshcherbak.net]# cd /vagrant/provision/server
[root@server.mrshcherbak.net server]# mkdir -p /vagrant/provision/server/http/etc/httpd/conf.d
[root@server.mrshcherbak.net server]# cd /vagrant/provision/server/http/var/www/html
[root@server.mrshcherbak.net server]# mkdir -p /vagrant/provision/server/http/var/www/html
[root@server.mrshcherbak.net server]# mc

[root@server.mrshcherbak.net server]# ^C
[root@server.mrshcherbak.net server]# cd /vagrant/provision/server/http/var
[root@server.mrshcherbak.net var]# mc

[root@server.mrshcherbak.net www]# cp -R /etc/httpd/conf.d/* /vagrant/provision/server/http/etc/
httpd/conf.d/
[root@server.mrshcherbak.net www]# cp -R /var/www/html/* /vagrant/provision/server/http/var/www/
html
[root@server.mrshcherbak.net www]# cd /vagrant/provision/server/dns/
[root@server.mrshcherbak.net dns]# cp -R /var/named/* /vagrant/provision/server/dns/var/named/
cp: overwrite '/vagrant/provision/server/dns/var/named/data/named.run'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind.jnl'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/mrshcherbak.net'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.ca'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.empty'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.localhost'? yes
cp: overwrite '/vagrant/provision/server/dns/var/named/named.loopback'? yes
[root@server.mrshcherbak.net dns]#
```

```
[root@server.mrshcherbak.net server]# touch http.sh
[root@server.mrshcherbak.net server]# chmod +x http.sh
[root@server.mrshcherbak.net server]# ls
01-dummy.sh  dhcp  dhcp.sh  dns  dns.sh  http  http.sh
```

```
mc [root@server.mrshcherbak.net]:/vagrant/provision/server
mc [root@server.mrshcherbak.net]:/vagrant... x root@server:~ x
http.sh [-----] 31 L: [ 1+11 12/ 23] *(295 / 515b) 0010 0x00A [*][X]
#!/bin/bash
echo "Provisioning script $0"
echo "Install needed packages"
dnf -y groupinstall "Basic Web Server"
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
echo "Start http service"
systemctl enable httpd
systemctl start httpd
1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9PullDn 10Quit
```

```
C:\Work\mrshcherbak\vagrant\Vagrantfile - Notepad++
Файл Правка Поиск Вид Кодировки Синтаксисы Опции Инструменты Макросы Запуск Плаг
01-routing.sh x Vagrantfile x
23 ## Server configuration
24 config.vm.define "server", autostart: false do |server|
25   server.vm.box = "rocky9"
26   server.vm.hostname = 'server'
27
28   server.vm.boot_timeout = 1440
29
30   server.ssh.insert_key = false
31   server.ssh.username = 'vagrant'
32   server.ssh.password = 'vagrant'
33
34   server.vm.network :private_network,
35                     ip: "192.168.1.1",
36                     virtualbox____intnet: true
37
38   server.vm.provision "server dummy",
39                       type: "shell",
40                       preserve_order: true,
41                       path: "provision/server/01-dummy.sh"
42
43   server.vm.provision "server dns",
44                       type: "shell",
45                       preserve_order: true,
46                       path: "provision/server/dns.sh"
47
48   server.vm.provision "server dhcp",
49                       type: "shell",
50                       preserve_order: true,
51                       path: "provision/server/dhcp.sh"
52
53   server.vm.provision "server http",
54                       type: "shell",
55                       preserve_order: true,
56                       path: "provision/server/http.sh"
57
58   server.vm.provider :virtualbox do |v|
```

Вывод: таким образом, в ходе выполнения л/р №4, я приобрела практические навыки по установке и базовому конфигурированию HTTP-сервера Apache.