

**РОССИЙСКИЙ УНИВЕРСИТЕТ ДРУЖБЫ НАРОДОВ**

**Факультет физико-математических и естественных наук**

**Кафедра прикладной информатики и теории вероятностей**

**ПРЕЗЕНТАЦИЯ**

**ВЫПОЛНЕННОЙ ЛАБОРАТОРНОЙ РАБОТЫ № 4**

*дисциплина: Администрирование сетевых подсистем*

**Базовая настройка HTTP-сервера Apache**

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Группа: НПИбд-02-20

**МОСКВА**

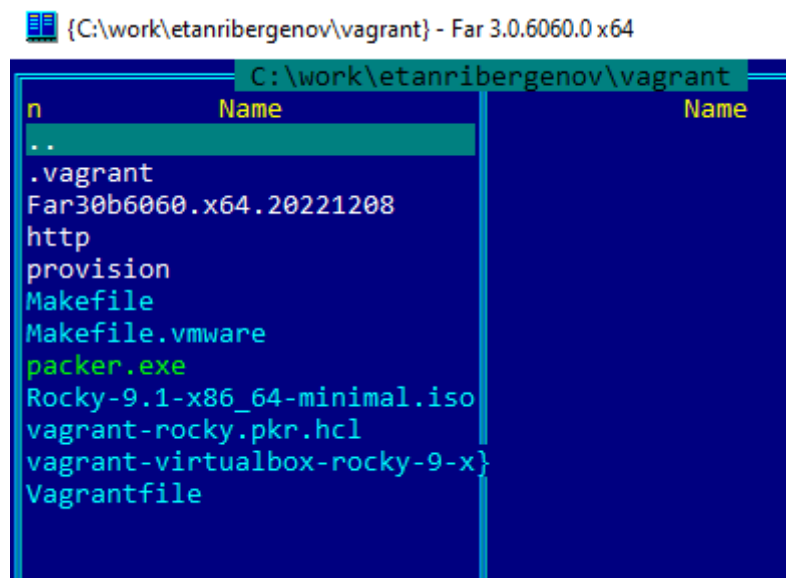
2023 г.

## Цель работы:

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

## Ход работы:

### 1. Установка HTTP-сервера



*Рис. 1. Рабочий каталог с проектом*

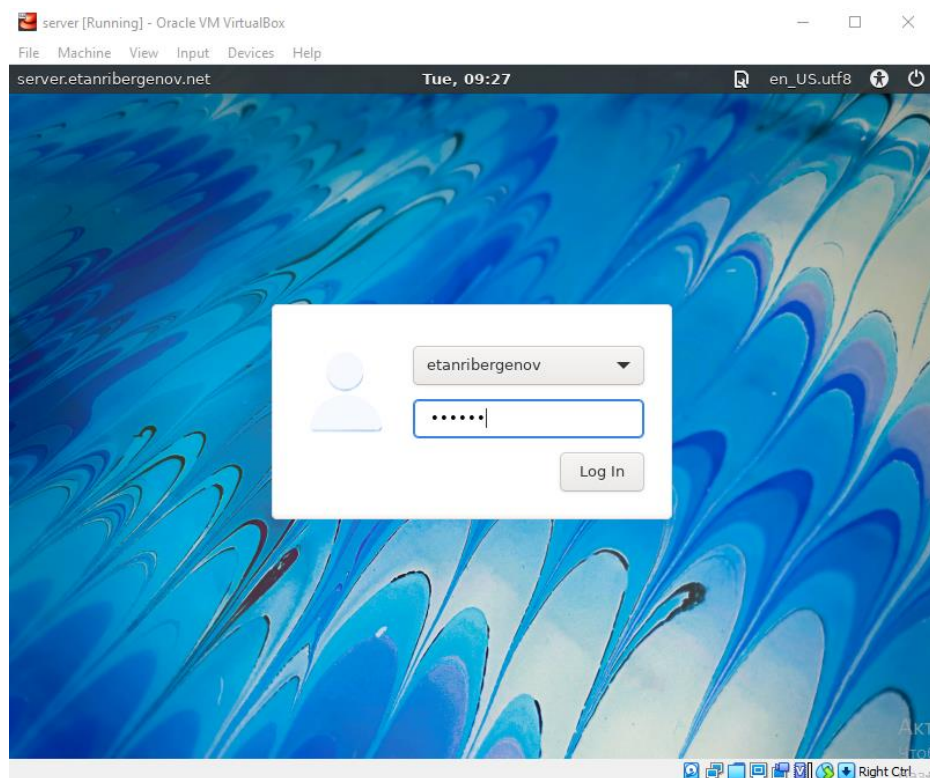
```

Far Manager, version 3.0.6060.0 x64
Copyright © 1996-2000 Eugene Roshal, Copyright © 2000-2022 Far Group

C:\work\etanribergenov\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

```

*Рис. 2. Запуск БМ сервера*



*Рис. 3. Вход в БМ сервер*

```
root@server:~
[etanribergenov@server.etanribergenov.net ~]$ sudo -i
[sudo] password for etanribergenov:
[root@server.etanribergenov.net ~]#
```

*Рис. 4. Переход в режим суперпользователя*

```
[root@server.etanribergenov.net ~]# LANG=C yum grouplist
Rocky Linux 9 - BaseOS                218 B/s | 4.1 kB    00:19
Rocky Linux 9 - AppStream             320 B/s | 4.5 kB    00:14
Rocky Linux 9 - Extras                103 B/s | 2.9 kB    00:29
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
```

*Рис. 5. Установка стандартного веб-сервера из репозитория: просмотр групп пакетов*

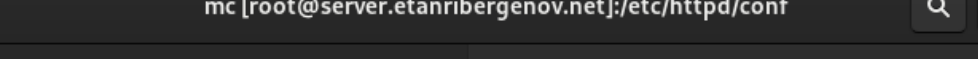
```
[root@server.etanribergenov.net ~]# dnf -y groupinstall "Basic Web Server"
Last metadata expiration check: 0:03:22 ago on Tue 04 Apr 2023 09:35:09 AM UTC.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing Groups:
Basic Web Server

Transaction Summary
=====
Complete!
[root@server.etanribergenov.net ~]#
```

*Рис. 6. Установка стандартного веб-сервера из репозитория: скачивание*

## 2. Базовое конфигурирование HTTP-сервера

- Просмотр конфигурационных файлов



The image shows a file manager window with a dark theme. The title bar at the top reads "mc [root@server.etanribergenov.net]:/etc/httpd/conf". There are three icons on the right: a magnifying glass, a hamburger menu, and a close button. Below the title bar, there are two tabs. The first tab is labeled "root@server:~" and the second tab is labeled "mc [root@server.etanribergenov.net]:/etc/h...". The main area is split into two panes. The left pane shows a directory listing for "/etc/httpd/conf". The right pane shows a directory listing for "/var/named/master/fz".

Left	File	Command	Options	Right			
<-	/etc/httpd/conf		.[^]>	<- /var/named/master/fz			
.n	Name	Size	Modify time	.n	Name	Size	Modify time
UP	--DIR	Apr 3 14:55		UP	--DIR	Apr 3 12:51	
httpd.conf		12005	Feb 28 17:06	etanribergenov.net		401	Apr 3 15:06
magic		13430	Feb 28 17:07	etanriber~v.net.jnl		1408	Apr 3 14:53

Рис. 7. Содержимое каталога /etc/httpd/conf

```
#  
ServerRoot "/etc/httpd"
```

Рис. 8. Содержимое главного конф. файла httpd.conf: символическая ссылка

```
/etc/httpd/conf/httpd.conf  
#  
#Listen 12.34.56.78:80  
Listen 80
```

Рис. 9. Содержимое главного конф. файла httpd.conf: прослушиваемый порт

```

User apache
Group apache

# 'Main' server configuration
#
# The directives in this section set up the values used by the 'main'
# server, which responds to any requests that aren't handled by a
# <VirtualHost> definition. These values also provide defaults for
# any <VirtualHost> containers you may define later in the file.
#
# All of these directives may appear inside <VirtualHost> containers,
# in which case these default settings will be overridden for the
# virtual host being defined.
#
#
# ServerAdmin: Your address, where problems with the server should be
# e-mailed. This address appears on some server-generated pages, such
# as error documents. e.g. admin@your-domain.com
#
ServerAdmin root@localhost

```

*Рис. 10. Содержимое главного конф. файла httpd.conf: пользователь и группа, почта.*

```

/etc/httpd/conf/httpd.conf 5227/12005
#
DocumentRoot "/var/www/html"

#
# 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.

```

*Рис. 11. Содержимое главного конф. файла httpd.conf: каталог с контентом и права доступа*

Left	File	Command	Options
<	/etc/httpd/conf.d		.[^]>
.n	Name	Size	Modify time
/..		UP - - DIR	Apr 3 14:55
	README	400	Feb 28 17:08
	autoindex.conf	2916	Feb 28 17:08
	fcgid.conf	401	May 25 2022
	manual.conf	344	Feb 28 17:06
	ssl.conf	8720	Feb 28 17:06
	userdir.conf	1252	Feb 28 17:06
	welcome.conf	653	Feb 28 17:06

*Рис. 12. Содержимое каталога /etc/httpd/conf.d*

– Работа с межсетевым экраном

```
Complete!
[root@server.etanribergenov.net ~]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client dns ssh
```

*Рис. 13. Разрешённые для работы с межсетевым экраном службы*

```
[root@server.etanribergenov.net ~]# firewall-cmd --get-services
RH-Satellite-6 RH-Satellite-6-capsule amanda-client amanda-k5-client amqp amqps apcup
sd audit bacula-bacula-client bb bgp bitcoin bitcoin-rpc bitcoin-testnet bitcoin-test
net-rpc bittorrent-lsd ceph ceph-mon cfengine cockpit collectd condor-collector ctdb
dhcp dhcpv6 dhcpv6-client distcc dns dns-over-tls docker-registry docker-swarm dropbo
x-lansync elasticsearch etcd-client etcd-server finger foreman foreman-proxy freeipa-
4 freeipa-ldap freeipa-ldaps freeipa-replication freeipa-trust ftp galera ganglia-cli
ent ganglia-master git grafana gre high-availability http https imap imaps ipp ipp-cl
ient ipsec irc ircs iscsi-target isns jenkins kadmin kdeconnect kerberos kibana klogi
n kpasswd kprop kshell kube-api kube-apiserver kube-control-plane kube-controller-man
ager kube-scheduler kubelet-worker ldap ldaps libvirt libvirt-tls lightning-network l
lmnr managesieve matrix mdns memcache minidlna mongodb mosh mounthd mqtt mqtt-tls ms-w
bt mssql murmur mysql nbd netbios-ns nfs nfs3 nmea-0183 nrpe ntp nut openvpn ovirt-im
ageio ovirt-storageconsole ovirt-vmconsole plex pncd pmpoxy pmwebapi pmwebapis pop3
pop3s postgresql privoxy prometheus proxy-dhcp ptp pulseaudio puppetmaster quassel ra
dius rdp redis redis-sentinel rpc-bind rquotad rsh rsyncd rtsp salt-master samba samb
a-client samba-dc sane sip sips slp smtp smtp-submission smtps snmp snmptrap spideroa
k-lansync spotify-sync squid ssdp ssh steam-streaming svdrp svn syncthing syncthing-g
ui synergy syslog syslog-tls telnet tentacle tftp tile38 tinc tor-socks transmission-
client upnp-client vdsms vnc-server wbem-http wbem-https wireguard wsmans wsmans xdmcp
xmpp-bosh xmpp-client xmpp-local xmpp-server zabbix-agent zabbix-server
```

*Рис. 14. Все доступные службы*



```

add lockdown whitelist uid=0 add source port=
[root@server.etanribergenov.net ~]# firewall-cmd --add-service=http
success
[root@server.etanribergenov.net ~]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client dns http ssh
[root@server.etanribergenov.net ~]# firewall-cmd --add-service=http --permanent
success
[root@server.etanribergenov.net ~]#

```

*Рис. 15. Добавление службы http*

– Запуск лога системных сообщений для проверки запуска http-сервера и самого сервера

```

root@server:~ x mc [root@server.etanrib... x root@server:~ x
[etanribergenov@server.etanribergenov.net ~]$ sudo -i
[sudo] password for etanribergenov:
[root@server.etanribergenov.net ~]# journalctl -x -f
Apr 04 10:45:12 server.etanribergenov.net systemd[1]: systemd-hostnamed.service: Deac
tivated successfully.
Subject: Unit succeeded
Defined-By: systemd
Support: https://access.redhat.com/support
The unit systemd-hostnamed.service has successfully entered the 'dead' state.
Apr 04 11:01:01 server.etanribergenov.net CROND[6182]: (root) CMD (run-parts /etc/cro
n.hourly)
Apr 04 11:01:01 server.etanribergenov.net run-parts[6185]: (/etc/cron.hourly) startin
g 0anacron
Apr 04 11:01:01 server.etanribergenov.net run-parts[6191]: (/etc/cron.hourly) finishe
d 0anacron
Apr 04 11:01:01 server.etanribergenov.net CROND[6181]: (root) CMDEND (run-parts /etc/
cron.hourly)
Apr 04 11:21:33 server.etanribergenov.net systemd[4469]: Started VTE child process 63
35 launched by gnome-terminal-server process 5208.
Subject: A start job for unit UNIT has finished successfully
Defined-By: systemd
Support: https://access.redhat.com/support
A start job for unit UNIT has finished successfully.
The job identifier is 602.

```

*Рис. 16. Лог системных сообщений*

```

[root@server.etanribergenov.net ~]# systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/
systemd/system/httpd.service.
[root@server.etanribergenov.net ~]# systemctl start httpd
[root@server.etanribergenov.net ~]#

```

*Рис. 17. Запуск и активация http-сервера*



```
Apr 04 11:24:34 server.etanribergenov.net systemd[1]: httpd-init.service: Consumed 11.878s CPU time.
Subject: Resources consumed by unit runtime
Defined-By: systemd
Support: https://access.redhat.com/support

The unit httpd-init.service completed and consumed the indicated resources.
Apr 04 11:24:34 server.etanribergenov.net systemd[1]: Starting The Apache HTTP Server
...
Subject: A start job for unit httpd.service has begun execution
Defined-By: systemd
Support: https://access.redhat.com/support

A start job for unit httpd.service has begun execution.

The job identifier is 2960.
Apr 04 11:24:35 server.etanribergenov.net systemd[1]: Started The Apache HTTP Server.
Subject: A start job for unit httpd.service has finished successfully
Defined-By: systemd
Support: https://access.redhat.com/support

A start job for unit httpd.service has finished successfully.

The job identifier is 2960.
Apr 04 11:24:35 server.etanribergenov.net httpd[6444]: Server configured, listening on: port 443, port 80
```

*Рис. 18. Проверка успешного запуска http-сервера в логе сис. сообщений*

### 3. Анализ работы HTTP-сервера

```
C:\work\etanribergenov\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
==> client: Forwarding ports...
    client: 22 (guest) => 2200 (host) (adapter 1)
==> client: Running 'pre-boot' VM customizations...
==> client: Booting VM...
==> client: Waiting for machine to boot. This may take a few minutes...
    client: SSH address: 127.0.0.1:2200
    client: SSH username: vagrant
    client: SSH auth method: password
==> client: Machine booted and ready!
==> client: Checking for guest additions in VM...
==> client: Setting hostname...
==> client: Configuring and enabling network interfaces...
==> client: Mounting shared folders...
    client: /vagrant => C:/work/etanribergenov/vagrant
==> client: Machine already provisioned. Run `vagrant provision` or use the `--provision`
==> client: flag to force provisioning. Provisioners marked to run always will still run.
==> client: Running provisioner: common hostname (shell)...
    client: Running: C:/Users/ETANRI~1/AppData/Local/Temp/vagrant-shell20230404-11988-p4fw4y.sh
==> client: Running provisioner: client routing (shell)...
    client: Running: C:/Users/ETANRI~1/AppData/Local/Temp/vagrant-shell20230404-11988-19et041.sh
    client: Provisioning script /tmp/vagrant-shell

C:\work\etanribergenov\vagrant>
1Help 2UserMn 3View 4Edit 5Copy 6RenMov 7MkFold 8Delete 9ConfMn 10Quit 11Plugi
```

Рис. 19. Запуск VM client

– Мониторинг

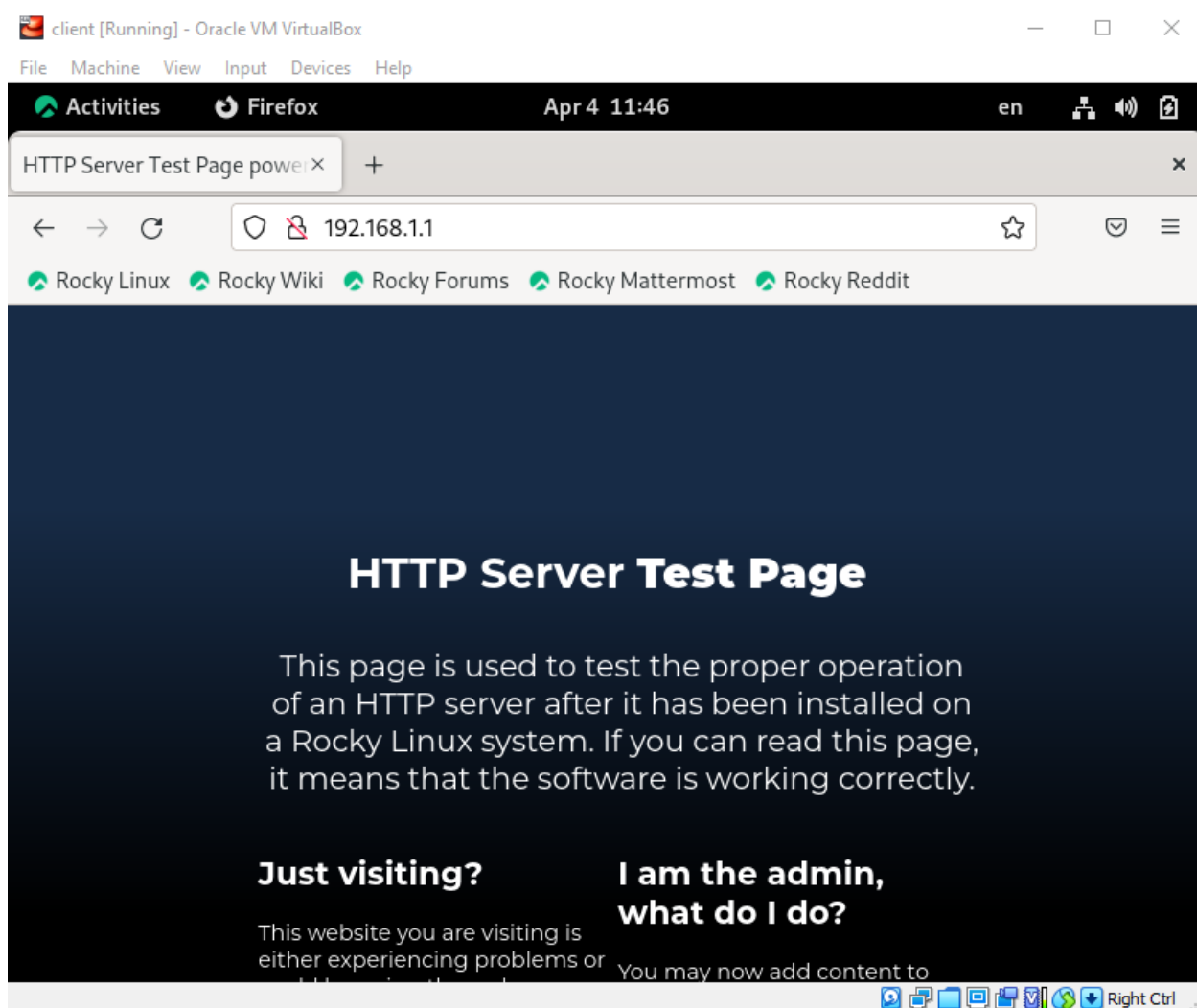
```
[etanribergenov@server.etanribergenov.net ~]$ sudo -i
[sudo] password for etanribergenov:
[root@server.etanribergenov.net ~]# tail -f /var/log/httpd/error_log
[Tue Apr 04 11:24:35.726760 2023] [core:notice] [pid 6444:tid 6444] SELinux policy en
abled; httpd running as context system_u:system_r:httpd_t:s0
[Tue Apr 04 11:24:35.750140 2023] [suexec:notice] [pid 6444:tid 6444] AH01232: suEXEC
mechanism enabled (wrapper: /usr/sbin/suexec)
[Tue Apr 04 11:24:35.869827 2023] [lbmethod_heartbeat:notice] [pid 6444:tid 6444] AH0
2282: No slotmem from mod_heartbeat
[Tue Apr 04 11:24:35.943834 2023] [mpm_event:notice] [pid 6444:tid 6444] AH00489: Apa
che/2.4.53 (Rocky Linux) OpenSSL/3.0.1 mod_fcgid/2.3.9 configured -- resuming normal
operations
[Tue Apr 04 11:24:35.943899 2023] [core:notice] [pid 6444:tid 6444] AH00094: Command
line: '/usr/sbin/httpd -D FOREGROUND'
```

Рис. 20. Лог ошибок работы веб-сервера

```
[root@server.etanribergenov.net ~]# tail -f /var/log/httpd/access_log
```

*Рис. 21. Запуск мониторинга доступа к веб-серверу*

– Проверка на работоспособность веб-сервера



*Рис. 22. Переход по адресу сервера в браузере VM client*

```
[root@server.etanribergenov.net ~]# tail -f /var/log/httpd/access_log
192.168.1.30 - - [04/Apr/2023:11:45:46 +0000] "GET / HTTP/1.1" 403 7620 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:102.0) Gecko/20100101 Firefox/102.0"
192.168.1.30 - - [04/Apr/2023:11:45:50 +0000] "GET /icons/poweredby.png HTTP/1.1" 200 15443 "http://192.168.1.1/" "Mozilla/5.0 (X11; Linux x86_64; rv:102.0) Gecko/20100101 Firefox/102.0"
192.168.1.30 - - [04/Apr/2023:11:45:50 +0000] "GET /poweredby.png HTTP/1.1" 200 5714 "http://192.168.1.1/" "Mozilla/5.0 (X11; Linux x86_64; rv:102.0) Gecko/20100101 Firefox/102.0"
192.168.1.30 - - [04/Apr/2023:11:45:50 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://192.168.1.1/" "Mozilla/5.0 (X11; Linux x86_64; rv:102.0) Gecko/20100101 Firefox/102.0"
```

*Рис. 23. Информация о доступе к серверу*

## 4. Настройка виртуального хостинга для HTTP-сервера

- Внесение изменений в файлы описания DNS-зон

```
[root@server.etanribergenov.net ~]# systemctl stop named  
[root@server.etanribergenov.net ~]#
```

Рис. 24. Приостановка работы DNS-сервера

```
etanribergenov.net [-M--] 0 L:[ 1+16 17/ 17] *(421 / 421b) <EOF>  
$ORIGIN .  
$TTL 86400<---->; 1 day  
etanribergenov.net<---->IN SOA<---->etanribergenov.net. server.etanribergenov.net. (  
<-----><-----><-----><----->2023040400 ; serial  
<-----><-----><-----><----->86400 ; refresh (1 day)  
<-----><-----><-----><----->3600 ; retry (1 hour)  
<-----><-----><-----><----->604800 ; expire (1 week)  
<-----><-----><-----><----->10800 ; minimum (3 hours)  
<-----><-----><-----><----->)  
<-----><-----><-----><----->NS<----->etanribergenov.net.  
<-----><-----><-----><----->A<----->192.168.1.1  
$ORIGIN etanribergenov.net.  
dhcp<--><-----><-----><-----><----->A<----->192.168.1.1  
ns<--><-----><-----><-----><----->A<----->192.168.1.1  
server<--><-----><-----><-----><----->A<----->192.168.1.1  
www<--><-----><-----><-----><----->A<----->192.168.1.1
```

Рис. 25. Запись для HTTP-сервера в файле прямой DNS-зоны

```
192.168.1 [-] 55 L:[ 1+16 17/ 17] *(516 / 516b) <EOF>  
$ORIGIN .  
$TTL 86400<---->; 1 day  
1.168.192.in-addr.arpa<---->IN SOA<---->1.168.192.in-addr.arpa. server.etanribergenov.net. (  
<-----><-----><-----><----->2023040400 ; 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.etanribergenov.net.  
$ORIGIN 1.168.192.in-addr.arpa.  
1<-----><-----><-----><----->PTR<----->server.etanribergenov.net.  
<-----><-----><-----><----->PTR<----->ns.etanribergenov.net.  
<-----><-----><-----><----->PTR<----->dhcp.etanribergenov.net.  
1<-----><-----><-----><----->PTR<----->www.etanribergenov.net.
```

Рис. 26. Запись для HTTP-сервера в файле обратной DNS-зоны

```
[root@server.etanribergenov.net ~]# systemctl start named
[root@server.etanribergenov.net ~]#
```

*Рис. 27. Перезапуск DNS-сервера*

– Настройка виртуальных веб-серверов

```
[root@server.etanribergenov.net conf.d]# touch server.etanribergenov.net.conf
[root@server.etanribergenov.net conf.d]# touch www.etanribergenov.net.conf
[root@server.etanribergenov.net conf.d]#
```

*Рис. 28. Создание конф. файлов*

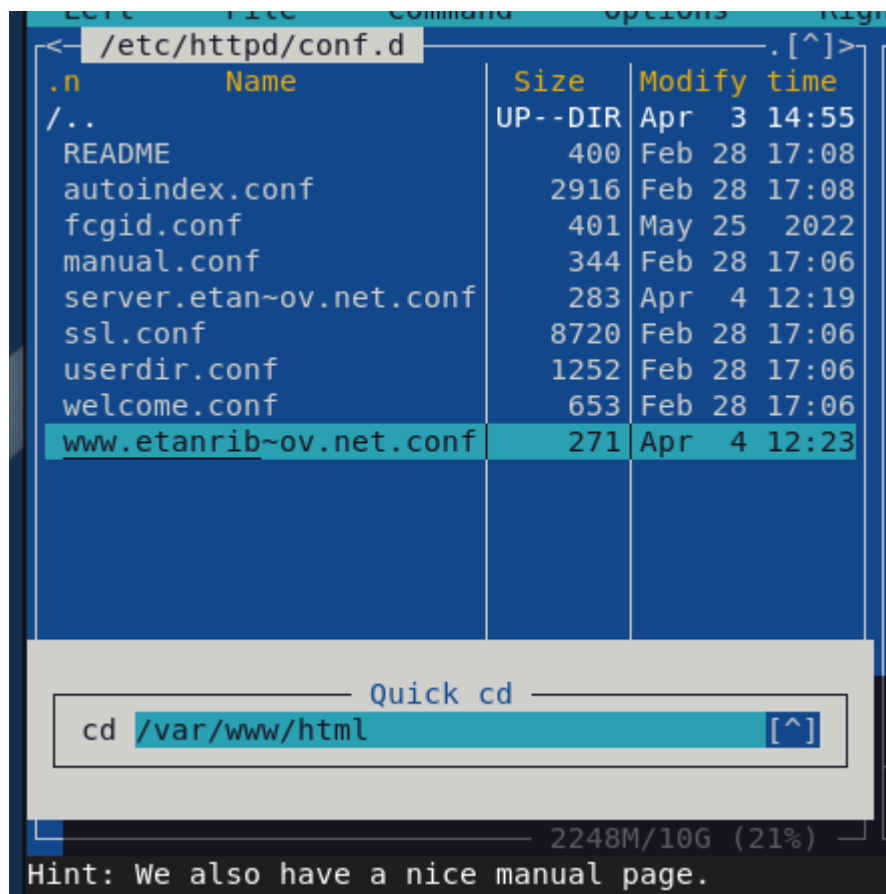
```
server.etanribergenov.net.conf [-M--] 0 L:[ 1+ 6 7/ 7]
<VirtualHost *:80>
  ServerAdmin webmaster@etanribergenov.net
  DocumentRoot /var/www/html/server.etanribergenov.net
  ServerName server.etanribergenov.net
  ErrorLog logs/server.etanribergenov.net-error_log
  CustomLog logs/server.etanribergenov.net-access_log common
</VirtualHost>
```

*Рис. 29. Содержание в файле server.etanribergenov.net.conf*

```
www.etanribergenov.net.conf [----] 14 L:[ 1+ 6 7/ 7]
<VirtualHost *:80>
  ServerAdmin webmaster@etanribergenov.net
  DocumentRoot /var/www/html/www.etanribergenov.net
  ServerName www.etanribergenov.net
  ErrorLog logs/www.etanribergenov.net-error_log
  CustomLog logs/www.etanribergenov.net-access_log common
</VirtualHost>
```

*Рис. 30. Содержание в файле www.etanribergenov.net.conf*

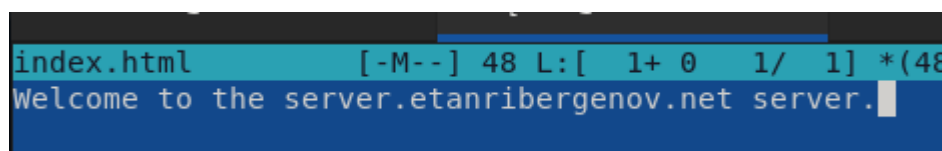
- Создание тестовых страниц для веб-серверов



*Рис. 31. Переход в каталог с содержимым веб-серверов*

```
[root@server.etanribergenov.net html]# mkdir server.etanribergenov.net
[root@server.etanribergenov.net html]# cd server.etanribergenov.net
[root@server.etanribergenov.net server.etanribergenov.net]# touch index.html
[root@server.etanribergenov.net server.etanribergenov.net]#
```

*Рис. 32. Создание каталога server.etanribergenov.net и тестовой страницы*



*Рис. 33. Тестовая страница*



```
[root@server.etanribergenov.net html]# mkdir www.etanribergenov.net
[root@server.etanribergenov.net html]# cd www.etanribergenov.net
[root@server.etanribergenov.net www.etanribergenov.net]# touch index.html
[root@server.etanribergenov.net www.etanribergenov.net]#
```

*Рис. 34. Создание каталога `www.etanribergenov.net` и тестовой страницы*

```
index.html      [-M--] 45 L:[ 1+ 0  1/ 1] *
Welcome to the www.etanribergenov.net server.
```

*Рис. 35. Тестовая страница*

```
[root@server.etanribergenov.net ~]# chown -R apache:apache /var/www
[root@server.etanribergenov.net ~]#
```

*Рис. 36. Изменение прав доступа в каталог с веб-контентом*

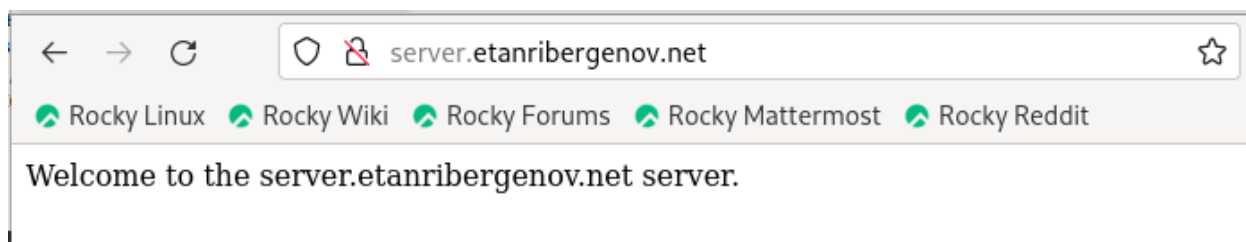
```
[root@server.etanribergenov.net ~]# restorecon -vR /etc
Relabeled /etc/sysconfig/network-scripts/ifcfg-eth1 from unconfined_u:object_r:user_tmp_t:s0 to
unconfined_u:object_r:net_conf_t:s0
Relabeled /etc/httpd/conf.d/www.etanribergenov.net.conf from unconfined_u:object_r:named_zone_t
:s0 to unconfined_u:object_r:httpd_config_t:s0
[root@server.etanribergenov.net ~]# restorecon -vR /var/named
[root@server.etanribergenov.net ~]# restorecon -vR /var/www
[root@server.etanribergenov.net ~]#
```

*Рис. 37. Восстановление контекста безопасности SELinux*

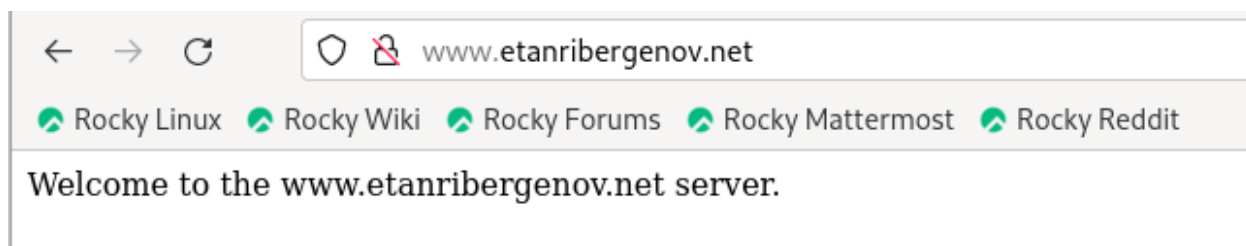
```
[root@server.etanribergenov.net ~]# restorecon -vR /var/www
[root@server.etanribergenov.net ~]# systemctl restart httpd
[root@server.etanribergenov.net ~]#
```

*Рис. 38. Перезапуск HTTP-сервера*

– Проверка доступа к веб-серверам из браузера client



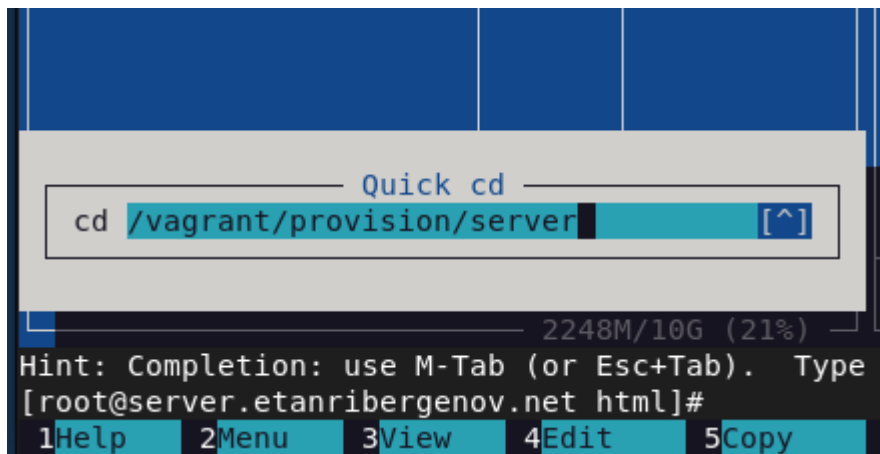
*Рис. 39. Проверка доступа к веб-серверу в браузере (1) – успешно*



*Рис. 40. Проверка доступа к веб-серверу в браузере (2) – успешно*

## 5. Внесение изменений в настройки внутреннего окружения виртуальной машины

- Создание подкаталогов и помещение в них конфигурационных файлов http-сервера



*Рис. 41. Переход в каталог настройки внутреннего окружения server*

```
[root@server.etanribergenov.net server]# mkdir -p http/etc/httpd/conf.d
[root@server.etanribergenov.net server]# mkdir -p http/var/www/html
[root@server.etanribergenov.net server]#
```

*Рис. 42. Создание подкаталогов*

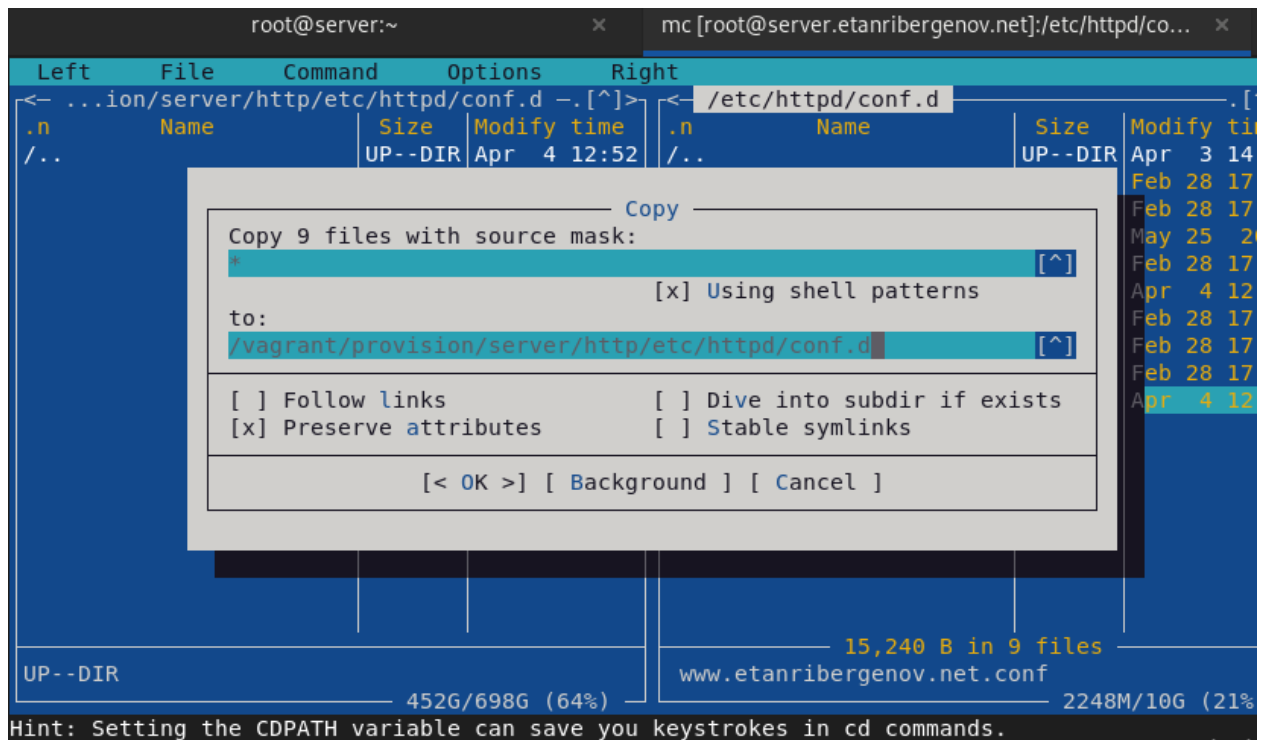


Рис. 43. Копирование конфиг. файлов http-сервера

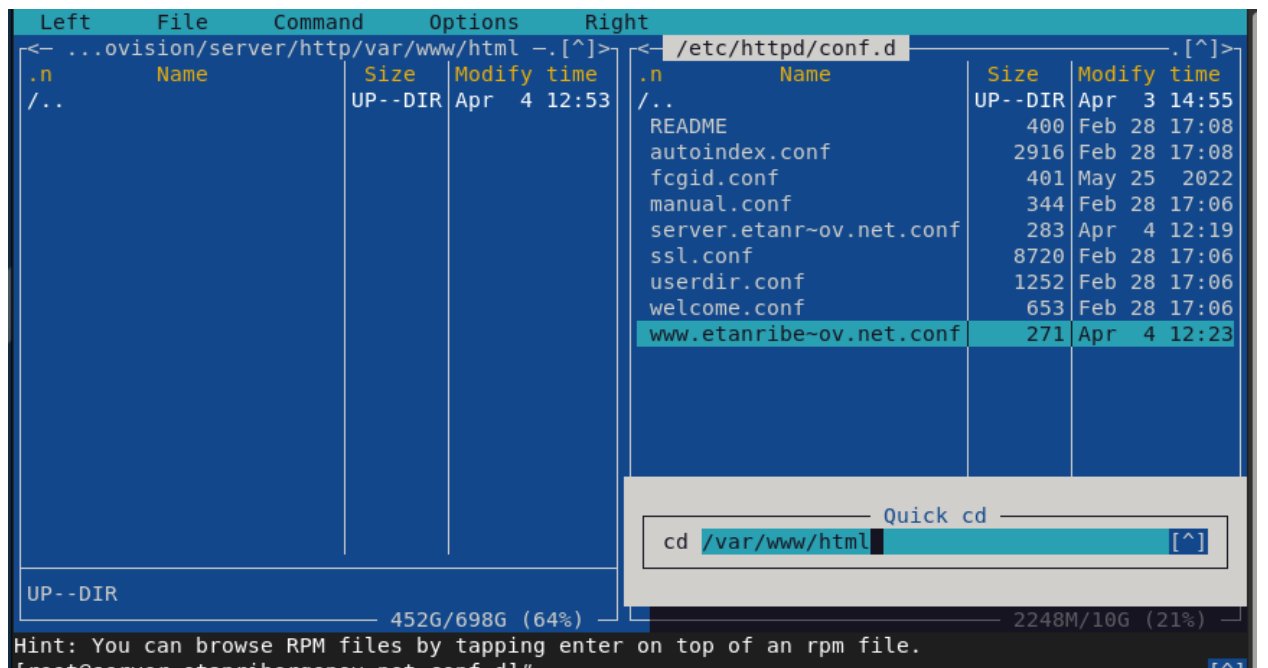


Рис. 44. Переход в каталог с содержимым веб-серверов

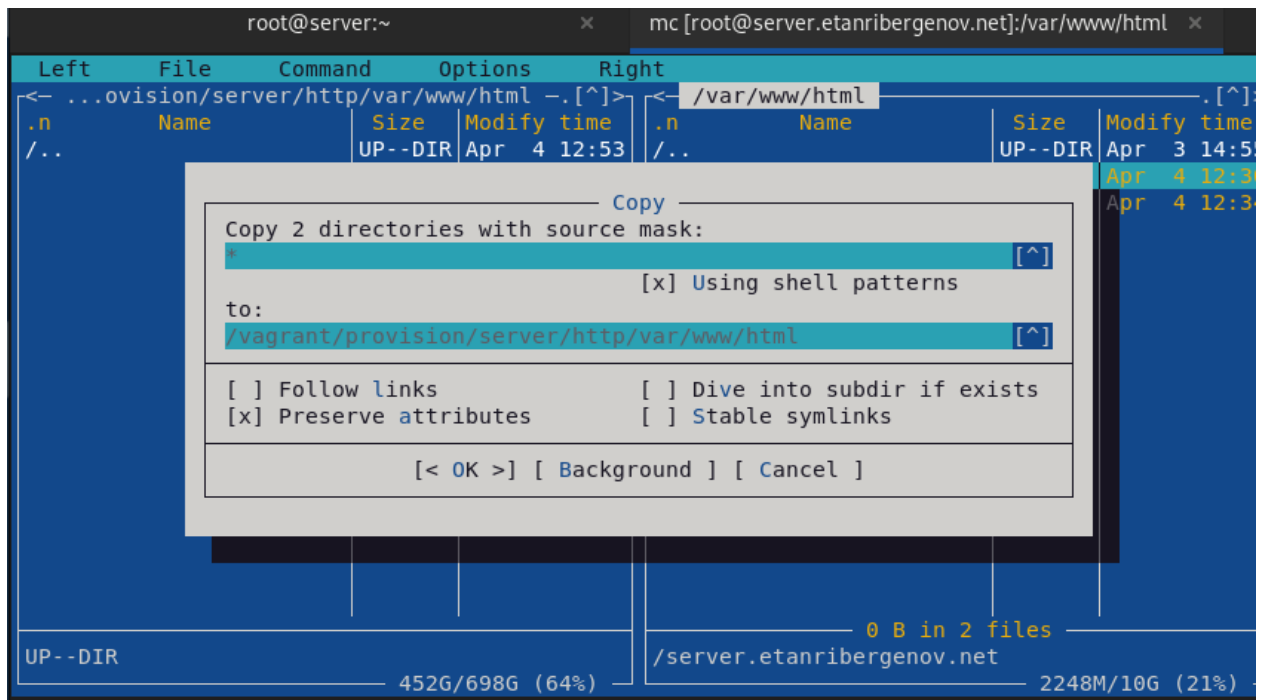


Рис. 45. Копирование содержимого веб-серверов в каталог настройки VM server

– Замена конфигурационных файлов DNS-сервера

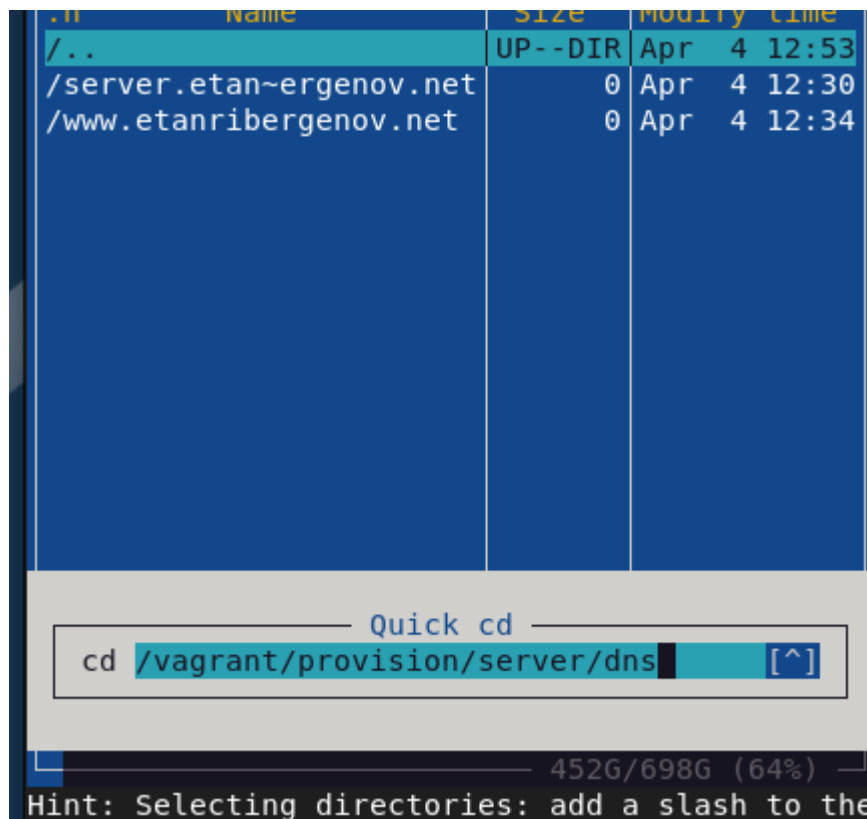


Рис. 46. Переход в подкаталог настройки DNS-сервера VM server

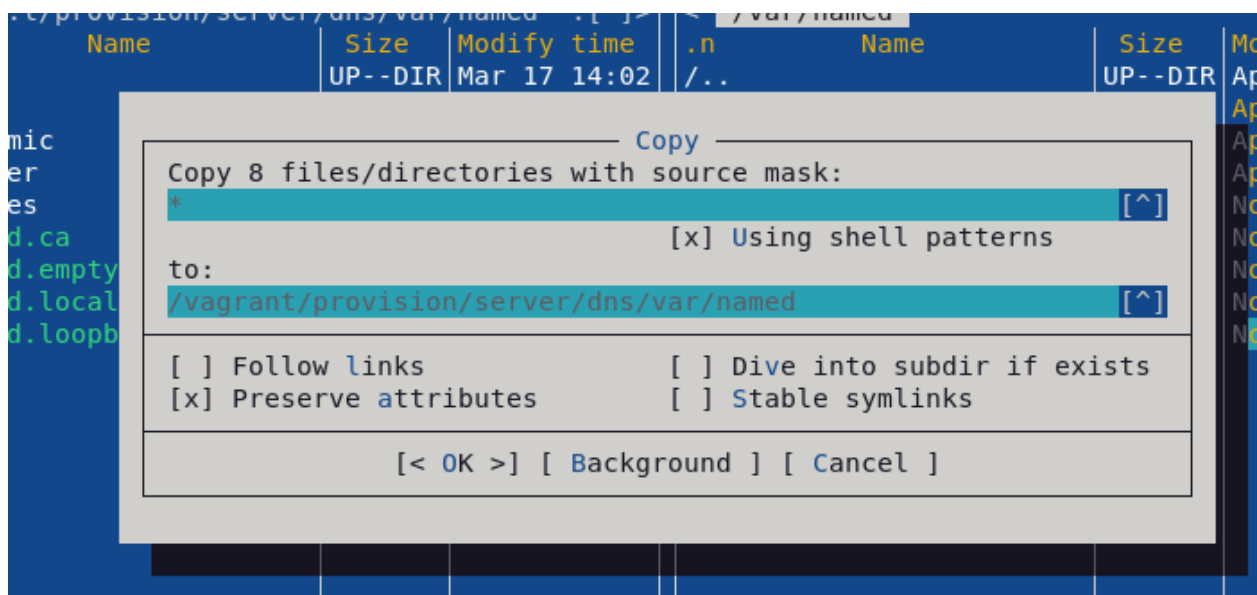


Рис. 47. Замена старых конфигурационных файлов на новые

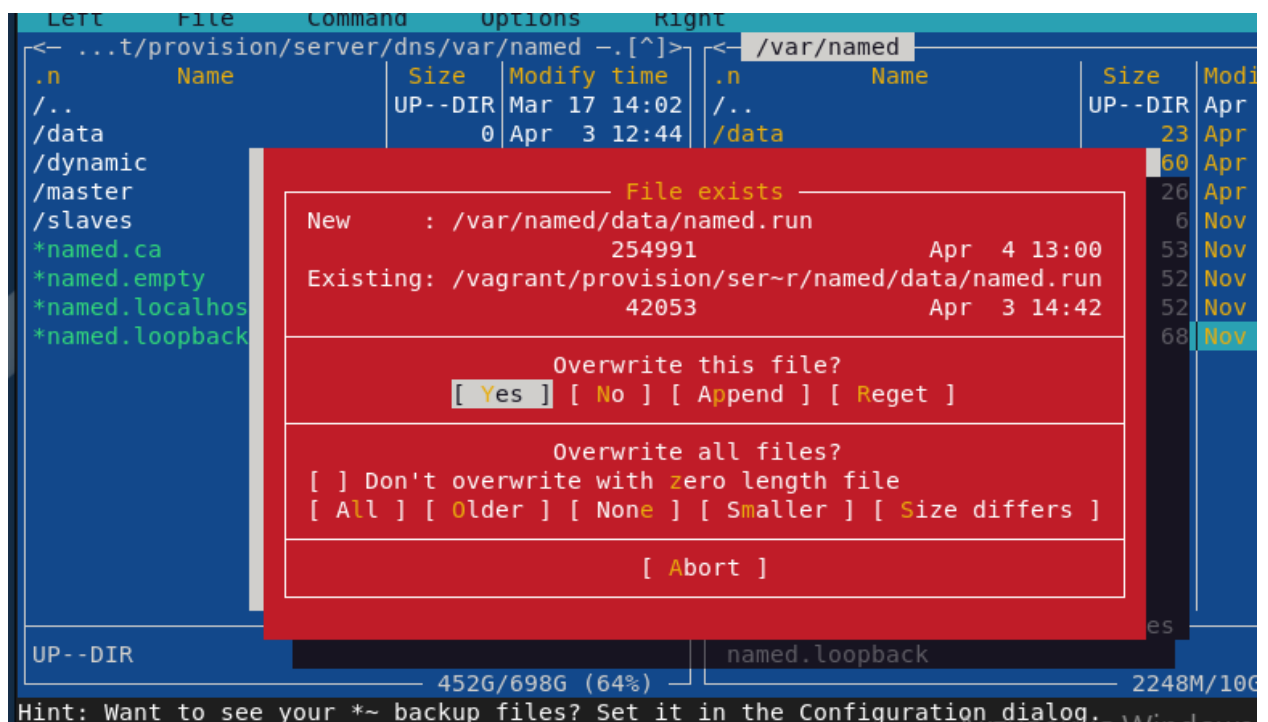
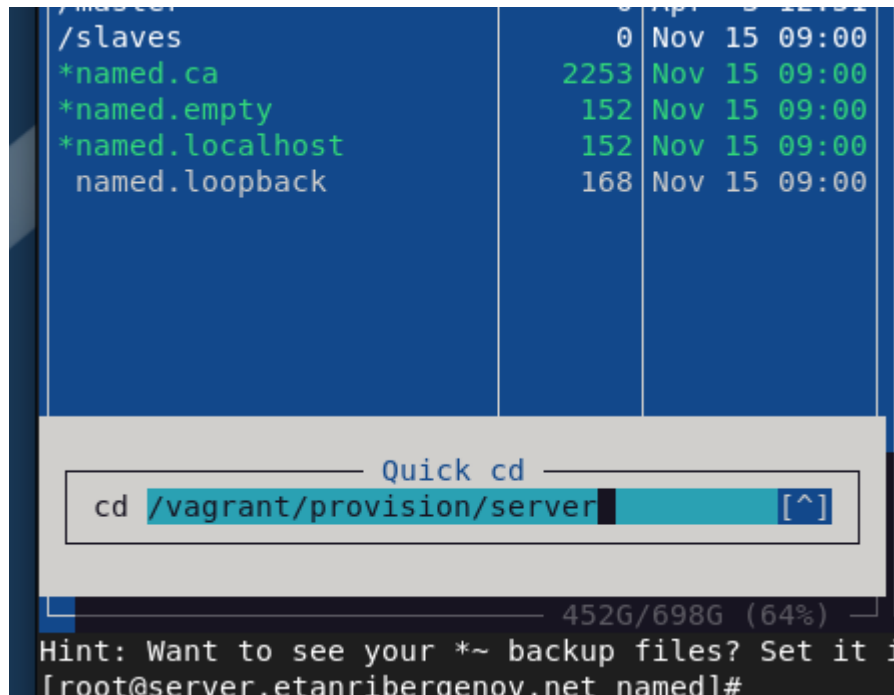


Рис. 48. Запрос системой разрешения на перезапись файлов

- Создание скрипта, повторяющего действия, выполненные в лаб. работе



The screenshot shows a terminal window with a blue background. At the top, there is a table listing files and their sizes. Below the table, a 'Quick cd' dialog box is open, showing the command 'cd /vagrant/provision/server' with a cursor at the end. The terminal output below the dialog box shows a hint and a prompt.

/slaves	0	Nov	15	09:00
*named.ca	2253	Nov	15	09:00
*named.empty	152	Nov	15	09:00
*named.localhost	152	Nov	15	09:00
named.loopback	168	Nov	15	09:00

Quick cd

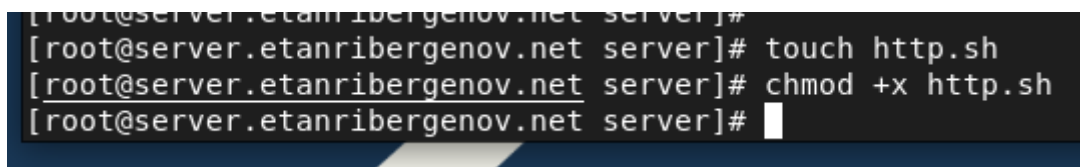
cd /vagrant/provision/server [^]

452G/698G (64%)

Hint: Want to see your \*~ backup files? Set it i

[root@server.etanribergenov.net named]#

*Рис. 49. Переход в каталог настройки VM server*



The screenshot shows a terminal window with a black background. The terminal output shows the creation of a file named 'http.sh' and the setting of permissions to '+x'.

```
[root@server.etanribergenov.net server]#  
[root@server.etanribergenov.net server]# touch http.sh  
[root@server.etanribergenov.net server]# chmod +x http.sh  
[root@server.etanribergenov.net server]#
```

*Рис. 50. Создание исполняемого файла*



```
http.sh [-M--] 0 L:[ 1+12 13/ 23] *(296 / 515b) 0
#!/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
```

*Рис. 51. Содержимое http.sh*

```
Vagrantfile [-M--] 38 L:[ 39+14 53/114] *(1357/3010b) 0010 0x0

server.vm.provision "server dns",
  type: "shell",
  preserve_order: true,
  path: "provision/server/dns.sh"

server.vm.provision "server dhcp",
  type: "shell",
  preserve_order: true,
  path: "provision/server/dhcp.sh"

server.vm.provision "server http",
  type: "shell",
  preserve_order: true,
  path: "provision/server/http.sh"

server.vm.provider :virtualbox do |v|
  v.linked_clone = true
  v.customize ["modifyvm", :id, "--natdnshostresolver1", "on"]
  # Customize the amount of memory on the VM
  v.memory = 1024
  v.cpus = 1
  v.name = "server"
  # Display the VirtualBox GUI when booting the machine
  v.gui = true
```

1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Del

*Рис. 52. Запись в конф. файле Vagrantfile для отработки скрипта при запуске VM*