

РОССИЙСКИЙ УНИВЕРСИТЕТ ДРУЖБЫ НАРОДОВ

Факультет физико-математических и естественных наук

Кафедра прикладной информатики и теории вероятностей

ПРЕЗЕНТАЦИЯ

ЛАБОРАТОРНОЙ РАБОТЫ № 2

дисциплина: Администрирование сетевых подсистем

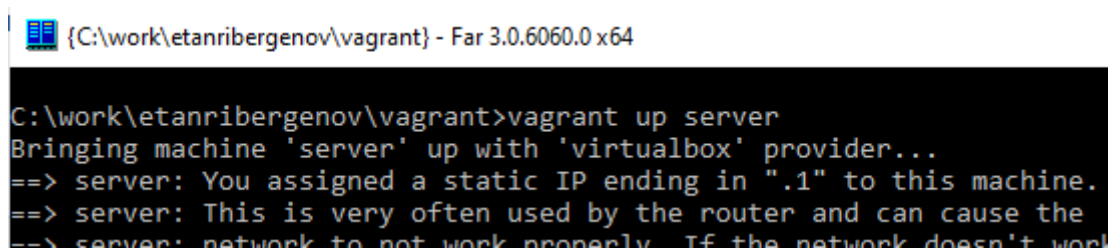
Настройка DNS-сервера

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Группа: НПИбд-02-20

МОСКВА

Установка DNS-сервера



```
{C:\work\etanribergenov\vagrant} - Far 3.0.6060.0 x64  
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
```

Рис. 1. Запуск VM Server

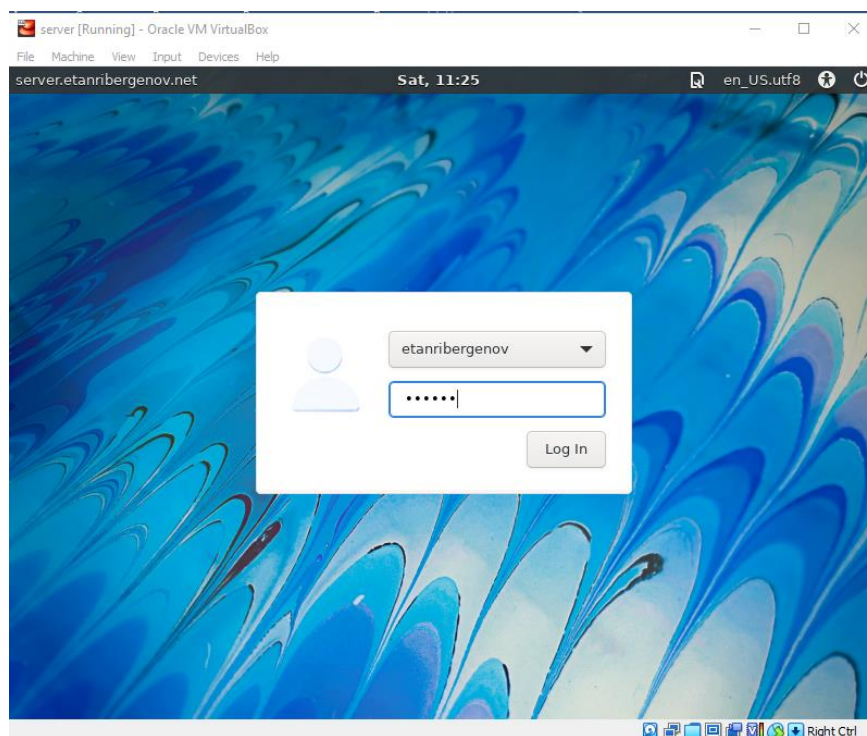


Рис. 2. Вход в систему

```
root@server:~  
[etanribergenov@server.etanribergenov.net ~]$ sudo -i  
We trust you have received the usual lecture from the local System  
Administrator. It usually boils down to these three things:  
  
#1) Respect the privacy of others.  
#2) Think before you type.  
#3) With great power comes great responsibility.  
  
[sudo] password for etanribergenov:  
[root@server.etanribergenov.net ~]#
```

Рис. 3. Переход в режим суперпользователя

```
root@server:~  
[root@server.etanribergenov.net ~]# dnf -y install bind bind-utils  
Extra Packages for Enterprise Linux 9 - x86_64 17 kB/s | 24 kB 00:01  
Extra Packages for Enterprise Linux 9 - x86_64 2.3 MB/s | 14 MB 00:06  
Rocky Linux 9 - BaseOS 671 B/s | 4.1 kB 00:06  
Rocky Linux 9 - BaseOS 445 kB/s | 1.8 MB 00:04  
Rocky Linux 9 - AppStream 2.8 kB/s | 4.5 kB 00:01  
Rocky Linux 9 - AppStream 874 kB/s | 6.6 MB 00:07  
Rocky Linux 9 - Extras 2.6 kB/s | 2.9 kB 00:01  
Rocky Linux 9 - Extras 4.0 kB/s | 8.5 kB 00:02  
Last metadata expiration check: 0:00:01 ago on Sat 18 Feb 2023 11:34:52 AM UTC.  
Package bind-utils-32:9.16.23-1.el9_0.1.x86_64 is already installed.  
Dependencies resolved.  
=====
```

Package	Arch	Version	Repository	Size
Installing:				
bind	x86_64	32:9.16.23-5.el9_1	appstream	488 k
Upgrading:				
bind-libs	x86_64	32:9.16.23-5.el9_1	appstream	1.2 M
bind-license	noarch	32:9.16.23-5.el9_1	appstream	14 k
bind-utils	x86_64	32:9.16.23-5.el9_1	appstream	200 k
Installing dependencies:				
bind-dnssec-doc	noarch	32:9.16.23-5.el9_1	appstream	46 k
python3-bind	noarch	32:9.16.23-5.el9_1	appstream	62 k

Рис. 4. Установка bind и bind-utils

```
complete!
[root@server.etanribergenov.net ~]# dig www.yandex.ru

; <<>> DiG 9.16.23-RH <<>> www.yandex.ru
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 41937
;; flags: qr rd ra; QUERY: 1, ANSWER: 4, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;www.yandex.ru.                IN      A

;; ANSWER SECTION:
www.yandex.ru.                3600    IN      A      77.88.55.60
www.yandex.ru.                3600    IN      A      5.255.255.70
www.yandex.ru.                3600    IN      A      77.88.55.88
www.yandex.ru.                3600    IN      A      5.255.255.77

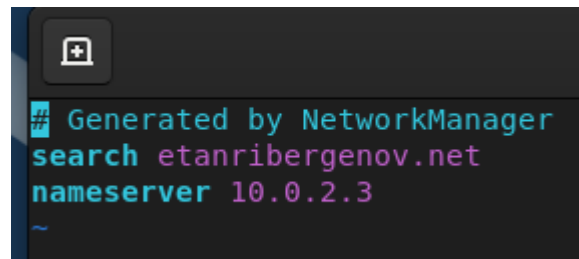
;; Query time: 7 msec
;; SERVER: 10.0.2.3#53(10.0.2.3)
;; WHEN: Sat Feb 18 11:42:17 UTC 2023
;; MSG SIZE rcvd: 95

[root@server.etanribergenov.net ~]#
```

Рис. 5. Запрос к DNS-адресу www.yandex.ru

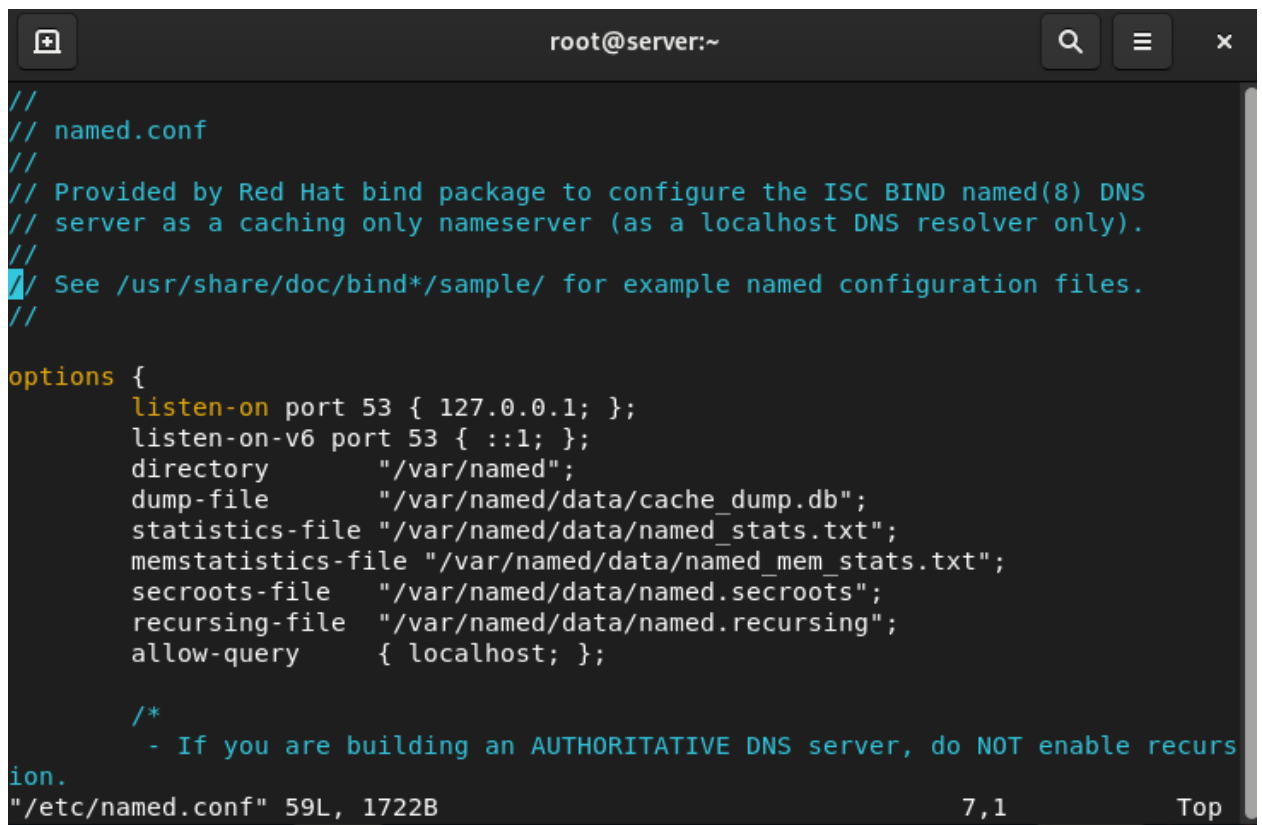
Конфигурирование кэширующего DNS-сервера

Конфигурирование кэширующего DNS-сервера при отсутствии фильтрации DNS-запросов маршрутизаторами



```
Generated by NetworkManager
search etanribergenov.net
nameserver 10.0.2.3
```

Рис. 6. Файл `/etc/resolv.conf`



```
root@server:~
//
// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
// server as a caching only nameserver (as a localhost DNS resolver only).
//
// See /usr/share/doc/bind*/sample/ for example named configuration files.
//
options {
    listen-on port 53 { 127.0.0.1; };
    listen-on-v6 port 53 { ::1; };
    directory "/var/named";
    dump-file "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named_stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    secroots-file "/var/named/data/named.secroots";
    recursing-file "/var/named/data/named.recursing";
    allow-query { localhost; };

    /*
     * - If you are building an AUTHORITATIVE DNS server, do NOT enable recurs
ion.
*/
"/etc/named.conf" 59L, 1722B 7,1 Top
```

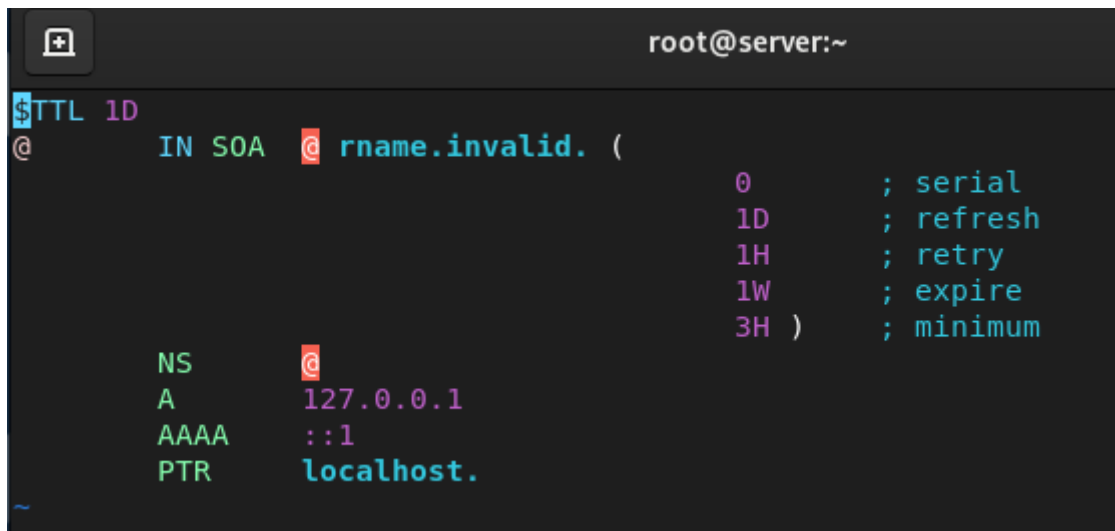
Рис. 7. Файл `/etc/named.conf`

```
root@server:~  
; <<>> DiG 9.11.3-RedHat-9.11.3-3.fc27 <<>> +bufsize=1200 +norec @a.root-servers  
.net  
; (2 servers found)  
;; global options: +cmd  
; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 46900  
;; flags: qr aa; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 27  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 1472  
;; QUESTION SECTION:  
; . IN NS  
  
;; ANSWER SECTION:  
518400 IN NS a.root-servers.net.  
518400 IN NS b.root-servers.net.  
518400 IN NS c.root-servers.net.  
518400 IN NS d.root-servers.net.  
518400 IN NS e.root-servers.net.  
518400 IN NS f.root-servers.net.  
518400 IN NS g.root-servers.net.  
518400 IN NS h.root-servers.net.  
5,1 Top
```

Рис. 8. Файл /var/named/named.ca

```
root@server:~  
$TTL 1D  
@ IN SOA @ rname.invalid. (  
0 ; serial  
1D ; refresh  
1H ; retry  
1W ; expire  
3H ) ; minimum  
  
NS @  
A 127.0.0.1  
AAAA ::1  
~  
~
```

Рис. 9. Файл /var/named/named.localhost



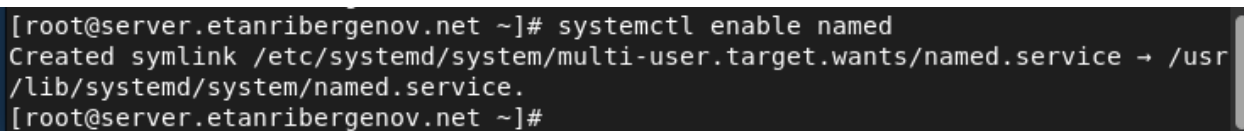
```
root@server:~  
$TTL 1D  
@      IN SOA  @ rname.invalid. (   
                                0      ; serial  
                                1D     ; refresh  
                                1H     ; retry  
                                1W     ; expire  
                                3H )   ; minimum  
NS      @  
A       127.0.0.1  
AAAA    ::1  
PTR     localhost.
```

Рис. 10. Файл /var/named/named.loopback



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

Рис. 11. Запуск DNS-сервера



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

Рис. 12. Включение запуска DNS-сервера в автозапуск при загрузке системы

```
[root@server.etanribergenov.net ~]# dig www.yandex.ru

;; <<>> DiG 9.16.23-RH <<>> www.yandex.ru
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 24300
;; flags: qr rd ra; QUERY: 1, ANSWER: 4, AUTHORITY: 0, ADDITIONAL: 0

;; QUESTION SECTION:
;www.yandex.ru.                IN      A

;; ANSWER SECTION:
www.yandex.ru.                3600    IN      A      5.255.255.80
www.yandex.ru.                3600    IN      A      77.88.55.55
www.yandex.ru.                3600    IN      A      5.255.255.88
www.yandex.ru.                3600    IN      A      77.88.55.50

;; Query time: 6 msec
;; SERVER: 10.0.2.3#53(10.0.2.3)
;; WHEN: Sat Feb 18 12:42:39 UTC 2023
;; MSG SIZE rcvd: 95

[root@server.etanribergenov.net ~]#
```

Рис. 13. Первый вариант применения команды dig


```
root@server:~  
[root@server.etanribergenov.net ~]# dig @127.0.0.1 www.yandex.ru  
  
; <<>> DiG 9.16.23-RH <<>> @127.0.0.1 www.yandex.ru  
; (1 server found)  
;; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 41425  
;; flags: qr rd ra; QUERY: 1, ANSWER: 4, AUTHORITY: 0, ADDITIONAL: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 1232  
; COOKIE: 18069067f25916f70100000063f0c82245909aca6bf52127 (good)  
;; QUESTION SECTION:  
;www.yandex.ru.                IN      A  
  
;; ANSWER SECTION:  
www.yandex.ru.                300     IN      A      77.88.55.50  
www.yandex.ru.                300     IN      A      5.255.255.80  
www.yandex.ru.                300     IN      A      77.88.55.55  
www.yandex.ru.                300     IN      A      5.255.255.88  
  
;; Query time: 721 msec  
;; SERVER: 127.0.0.1#53(127.0.0.1)  
.. WHEN: Sat Feb 19 12:44:19 UTC 2022
```

Рис. 14. Второй вариант применения команды dig

```
[root@server.etanribergenov.net ~]# nmcli connection edit System\ eth0  
==| nmcli interactive connection editor |==  
  
Editing existing '802-3-ethernet' connection: 'System eth0'  
  
Type 'help' or '?' for available commands.  
Type 'print' to show all the connection properties.  
Type 'describe [<setting>.<prop>]' for detailed property description.  
  
You may edit the following settings: connection, 802-3-ethernet (ethernet), 802-lx, d  
cb, sriov, ethtool, match, ipv4, ipv6, hostname, tc, proxy  
nmcli>  
nmcli> remove ipv4.dns  
nmcli> set ipv4.ignore-auto-dns yes  
nmcli> set ipv4.dns 127.0.0.1  
nmcli> save  
Connection 'System eth0' (5fb06bd0-0bb0-7ffb-45f1-d6edd65f3e03) successfully updated.  
nmcli> quit  
[root@server.etanribergenov.net ~]#
```

Рис. 15. Назначение DNS-сервера сервером по умолчанию для хоста server и внутренней виртуальной сети

```
[root@server.etanribergenov.net ~]# systemctl restart NetworkManager
[root@server.etanribergenov.net ~]#
```

Рис. 16. Перезапуск NetworkManager

```
# Generated by NetworkManager
search etanribergenov.net
nameserver 127.0.0.1
~
```

Рис. 17. Файл etc/resolv.conf

```
options {
    listen-on port 53 { 127.0.0.1; any; };
    listen-on-v6 port 53 { ::1; };
    directory "/var/named";
    dump-file "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named_stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    secroots-file "/var/named/data/named.secroots";
    recursing-file "/var/named/data/named.recursing";
    allow-query { localhost; 192.168.0.0/16; };
}
```

Рис. 18. Изменения в файле /etc/named.conf

```
[root@server.etanribergenov.net ~]# firewall-cmd --add-service=dns
success
[root@server.etanribergenov.net ~]# firewall-cmd --add-service=dns --permanent
success
[root@server.etanribergenov.net ~]#
```

Рис. 19. Разрешение работы межсетевого экрана узла server с dns

```
root@server:~  
[root@server.etanribergenov.net ~]# lsof | grep UDP  
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1001/gvfs  
Output information may be incomplete.  
avahi-dae 556 avahi 12u IPv4 18149  
0t0 UDP *:mdns  
avahi-dae 556 avahi 13u IPv6 18150  
0t0 UDP *:mdns  
avahi-dae 556 avahi 14u IPv4 18151  
0t0 UDP *:55041  
avahi-dae 556 avahi 15u IPv6 18152  
0t0 UDP *:41913  
chronyd 593 chrony 5u IPv4 18136  
0t0 UDP localhost:323  
chronyd 593 chrony 6u IPv6 18137  
0t0 UDP localhost:323  
named 40805 named 16u IPv4 73097  
0t0 UDP localhost:domain  
named 40805 named 19u IPv6 73099  
0t0 UDP localhost:domain  
named 40805 40806 isc-net-0 named 16u IPv4 73097  
0t0 UDP localhost:domain  
named 40805 40806 isc-net-0 named 19u IPv6 73099  
0t0 UDP localhost:domain  
named 40805 40807 isc-timer named 16u IPv4 73097
```

Рис. 20. Вывод команды lsof | grep UDP

```
NetworkMa 40994 root 26u IPv4 75364  
0t0 UDP server.etanribergenov.net:bootpc->_gateway:bootps  
NetworkMa 40994 40995 gmain root 26u IPv4 75364  
0t0 UDP server.etanribergenov.net:bootpc->_gateway:bootps  
NetworkMa 40994 40996 gdbus root 26u IPv4 75364  
0t0 UDP server.etanribergenov.net:bootpc->_gateway:bootps  
[root@server.etanribergenov.net ~]#
```

Рис. 21. Вывод команды lsof | grep UDP: запросы идут через узел server

Конфигурирование первичного DNS-сервера

```
[root@server.etanribergenov.net ~]# cp /etc/named.rfc1912.zones /etc/named/  
[root@server.etanribergenov.net ~]# cd /etc/named  
[root@server.etanribergenov.net named]# mv /etc/named/named.rfc1912.zones /etc/named/  
etanribergenov.net  
[root@server.etanribergenov.net named]#
```

Рис. 22. Копирование и переименование шаблона *named.rfc1912.zones*

```
include "/etc/named.rfc1912.zones";  
include "/etc/named.root.key";  
include "/etc/named/etanribergenov.net";  
:wq
```

Рис. 23. Включение файла описания зоны в конфигурационном файле *DNS*

```
root@server:/etc/named  
// RFC 1912 section 4.1 : localhost TLDs and address zones  
// and https://tools.ietf.org/html/rfc6303  
// (c)2007 R W Franks  
//  
// See /usr/share/doc/bind*/sample/ for example named configuration files.  
//  
// Note: empty-zones-enable yes; option is default.  
// If private ranges should be forwarded, add  
// disable-empty-zone "."; into options  
//  
zone "etanribergenov.net" IN {  
    type master;  
    file "master/fz/etanribergenov.net";  
    allow-update { none; };  
};  
  
zone "1.168.192.in-addr.arpa" IN {  
    type master;  
    file "master/rz/192.168.1";  
    allow-update { none; };  
};  
:wq
```

Рис. 24. Файл /etc/named/etanribergenov.net после редактирования

```
[root@server.etanribergenov.net named]# cd /var/named
[root@server.etanribergenov.net named]# mkdir -p /var/named/master/fz
[root@server.etanribergenov.net named]# mkdir -p /var/named/master/rz
[root@server.etanribergenov.net named]#
```

Рис. 25. Создание подкаталогов

```
[root@server.etanribergenov.net named]#
[root@server.etanribergenov.net named]# cp /var/named/named.localhost /var/named/master/fz
[root@server.etanribergenov.net named]# cd /var/named/master/fz
[root@server.etanribergenov.net fz]# mv named.localhost etanribergenov.net
[root@server.etanribergenov.net fz]#
```

Рис. 26. Копирование и переименование шаблона прямой DNS-зоны

```
root@server:/var/named/master/rz
$TTL 1D
@      IN SOA  @ server.etanribergenov.net. (
                                2023021800      ; serial
                                1D                ; refresh
                                1H                ; retry
                                1W                ; expire
                                3H                ; minimum
      NS      @
      A       192.168.1.1
$ORIGIN etanribergenov.net
server  A      192.168.1.1
ns      A      192.168.1.1
~
```

Рис. 27. Файл /var/named/master/fz/user.net после редактирования

```
[root@server.etanribergenov.net fz]# cp /var/named/named.loopback /var/named/master/rz
[root@server.etanribergenov.net fz]# cd /var/named/master/rz
[root@server.etanribergenov.net rz]# mv named.loopback 192.168.1
[root@server.etanribergenov.net rz]#
```

Рис. 28. Копирование и переименование шаблона обратной DNS-зоны.

```
root@server:/var/named/master/rz
$TTL 1D
@      IN SOA  @ server.etanribergenov.net. (
                                2023021800      ; serial
                                1D      ; refresh
                                1H      ; retry
                                1W      ; expire
                                3H )   ; minimum
      NS      @
      A      192.168.1.1
      PTR     server.etanribergenov.net.
$ORIGIN 1.168.192.in-addr.arpa.
1      PTR     server.etanribergenov.net.
1      PTR     ns.etanribergenov.net.
~
```

Рис. 29. Файл 192.168.1 после редактирования

```
[root@server.etanribergenov.net rz]# chown -R named:named /etc/named
[root@server.etanribergenov.net rz]# chown -R named:named /var/named
[root@server.etanribergenov.net rz]#
```

Рис. 30. Изменения прав доступа к файлам

```
[root@server.etanribergenov.net rz]# restorecon -vR /etc
Relabeled /etc/sysconfig/network-scripts/ifcfg-eth1 from unconfined_u:object_r:user_t
mp_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@server.etanribergenov.net rz]# restorecon -vR /var/named
```

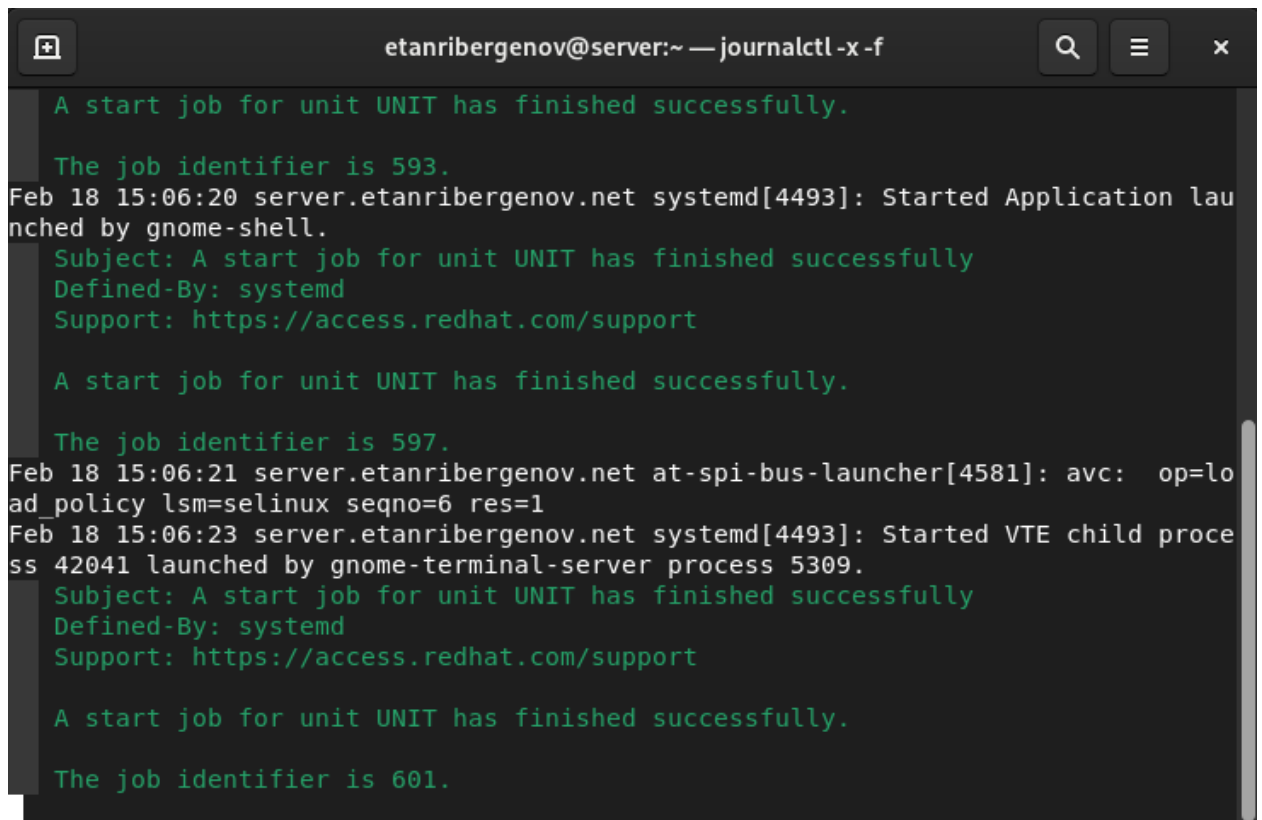
Рис. 31. Корректное восстановление меток файлов named в SELinux

```
[root@server.etanribergenov.net rz]# getsebool -a | grep named
named_tcp_bind_http_port --> off
named_write_master_zones --> on
```

Рис. 32. Проверка состояния переключателей SELinux, относящихся к named

```
[root@server.etanribergenov.net rz]# setsebool named_write_master_zones 1
[root@server.etanribergenov.net rz]# setsebool -P named_write_master_zones 1
[root@server.etanribergenov.net rz]#
```

Рис. 33. Разрешение named на запись в файлы DNS-зоны

A terminal window titled 'etanribergenov@server:~ — journalctl -x -f'. The output shows system logs with green text for success messages. It includes timestamps like 'Feb 18 15:06:20' and 'Feb 18 15:06:21', process IDs like 'systemd[4493]', and unit names like 'UNIT'. It also shows 'Subject' and 'Support' lines with a Red Hat link.

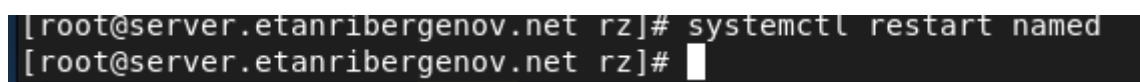
```
etanribergenov@server:~ — journalctl -x -f

A start job for unit UNIT has finished successfully.
The job identifier is 593.
Feb 18 15:06:20 server.etanribergenov.net systemd[4493]: Started Application lau
nched by gnome-shell.
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 597.
Feb 18 15:06:21 server.etanribergenov.net at-spi-bus-launcher[4581]: avc: op=lo
ad_policy lsm=selinux seqno=6 res=1
Feb 18 15:06:23 server.etanribergenov.net systemd[4493]: Started VTE child proce
ss 42041 launched by gnome-terminal-server process 5309.
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 601.
```

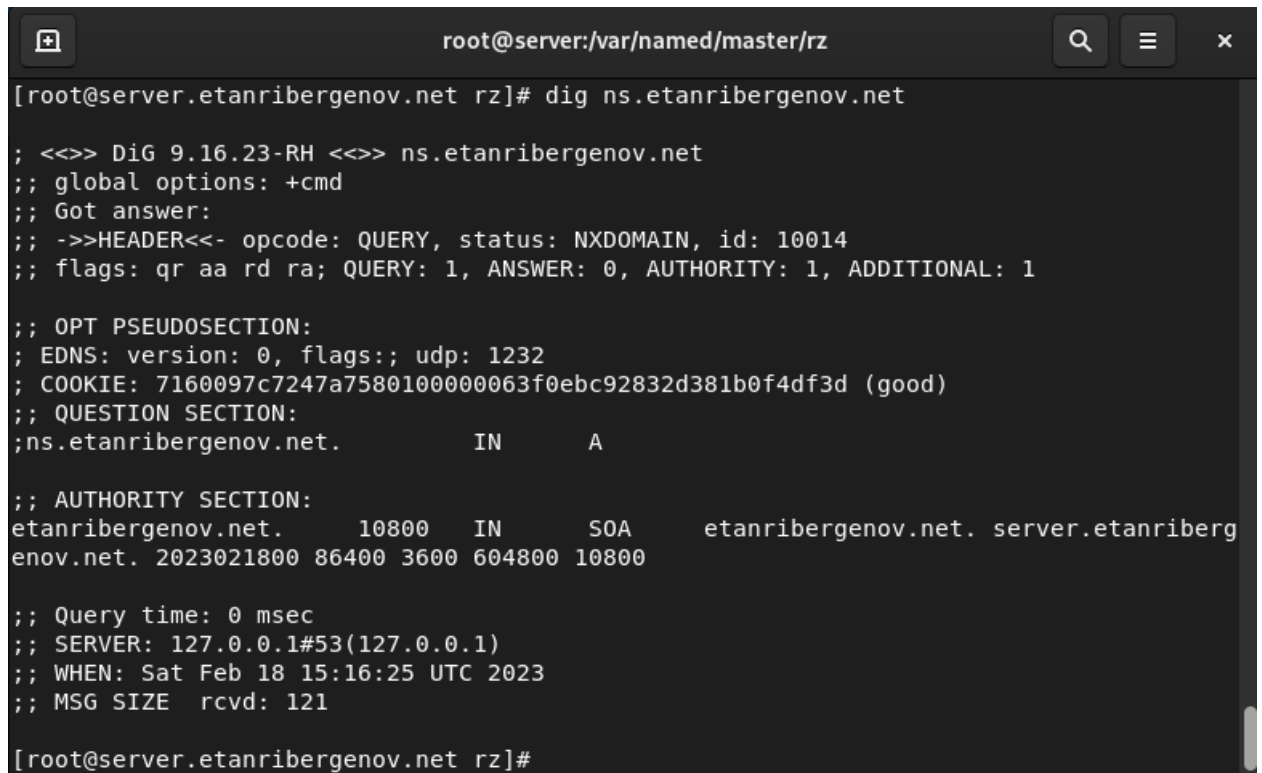
Рис. 34. Расширенный лог системных сообщений в дополнительном терминале

A terminal window showing a root prompt on 'server.etanribergenov.net'. The user enters the command 'systemctl restart named' and the prompt returns.

```
[root@server.etanribergenov.net rz]# systemctl restart named
[root@server.etanribergenov.net rz]#
```

Рис. 35. Перезапуск DNS-сервера в первом терминале

Анализ работы DNS-сервера



```
root@server:/var/named/master/rz
[root@server.etanribergenov.net rz]# dig ns.etanribergenov.net

; <<>> DiG 9.16.23-RH <<>> ns.etanribergenov.net
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NXDOMAIN, id: 10014
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

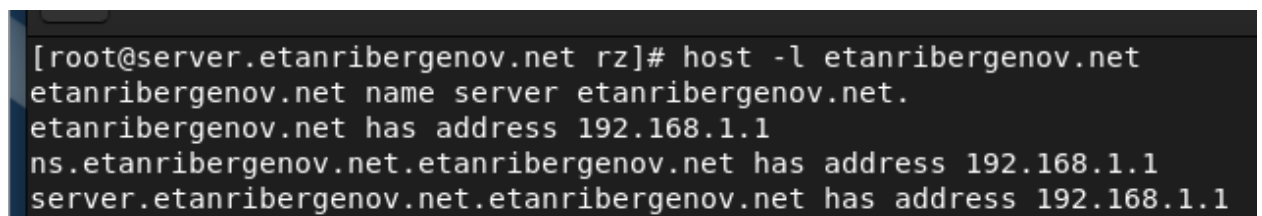
;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 7160097c7247a7580100000063f0ebc92832d381b0f4df3d (good)
;; QUESTION SECTION:
;ns.etanribergenov.net.      IN      A

;; AUTHORITY SECTION:
etanribergenov.net.      10800   IN      SOA     etanribergenov.net. server.etanriberg
enov.net. 2023021800 86400 3600 604800 10800

;; Query time: 0 msec
;; SERVER: 127.0.0.1#53(127.0.0.1)
;; WHEN: Sat Feb 18 15:16:25 UTC 2023
;; MSG SIZE rcvd: 121

[root@server.etanribergenov.net rz]#
```

Рис. 37. Описание DNS-зоны с сервера ns.etanribergenov.net



```
[root@server.etanribergenov.net rz]# host -l etanribergenov.net
etanribergenov.net name server etanribergenov.net.
etanribergenov.net has address 192.168.1.1
ns.etanribergenov.net.etanribergenov.net has address 192.168.1.1
server.etanribergenov.net.etanribergenov.net has address 192.168.1.1
```

Рис. 38. Все хосты в домене

```

[root@server.etanribergenov.net rz]# host -a etanribergenov.net
Trying "etanribergenov.net"
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 6074
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

;; QUESTION SECTION:
;etanribergenov.net.          IN      ANY

;; ANSWER SECTION:
etanribergenov.net.  86400   IN      SOA      etanribergenov.net. server.etanriberg
enov.net. 2023021800 86400 3600 604800 10800
etanribergenov.net.  86400   IN      NS       etanribergenov.net.
etanribergenov.net.  86400   IN      A        192.168.1.1

;; ADDITIONAL SECTION:
etanribergenov.net.  86400   IN      A        192.168.1.1

Received 125 bytes from 127.0.0.1#53 in 4 ms

```

Рис. 39. Расширенная информация о домене

```

[root@server.etanribergenov.net rz]# host -t A etanribergenov.net
etanribergenov.net has address 192.168.1.1

```

Рис. 40. IPv4-адрес домена

```

etanribergenov.net has address 192.168.1.1
[root@server.etanribergenov.net rz]# host -t PTR 192.168.1.1
1.1.168.192.in-addr.arpa domain name pointer ns.etanribergenov.net.
1.1.168.192.in-addr.arpa domain name pointer server.etanribergenov.net.
[root@server.etanribergenov.net rz]#

```

Рис. 41. Указатель доменного имени серверов


Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.etanribergenov.net rz]# cd /vagrant
[root@server.etanribergenov.net vagrant]# mkdir -p /vagrant/provision/server/dns/etc/named
[root@server.etanribergenov.net vagrant]# mkdir -p /vagrant/provision/server/dns/var/named/master/
[root@server.etanribergenov.net vagrant]# cp -R /etc/named.conf /vagrant/provision/server/dns/etc/
[root@server.etanribergenov.net vagrant]# cp -R /etc/named/* /vagrant/provision/server/dns/etc/named/
[root@server.etanribergenov.net vagrant]# cp -R /var/named/master/* /vagrant/provision/server/dns/var/named/master
[root@server.etanribergenov.net vagrant]#
```

Рис. 42. Создание каталогов и копирование конфигурационных файлов DNS

```
[root@server.etanribergenov.net vagrant]# cd /vagrant/provision/server
[root@server.etanribergenov.net server]# touch dns.sh
[root@server.etanribergenov.net server]# chmod +x dns.sh
[root@server.etanribergenov.net server]#
```

Рис. 43. Создание исполняемого файла



```
root@server:/vagrant/provision/server

#! /bin/bash

echo "Provisioning script $0"

echo "Install needed packages"
dnf -y install bind bind-utils

echo "Copy configuration files"
cp -R /vagrant/provision/server/dns/etc/* /etc
cp -R /vagrant/provision/server/dns/var/named/* /var/named

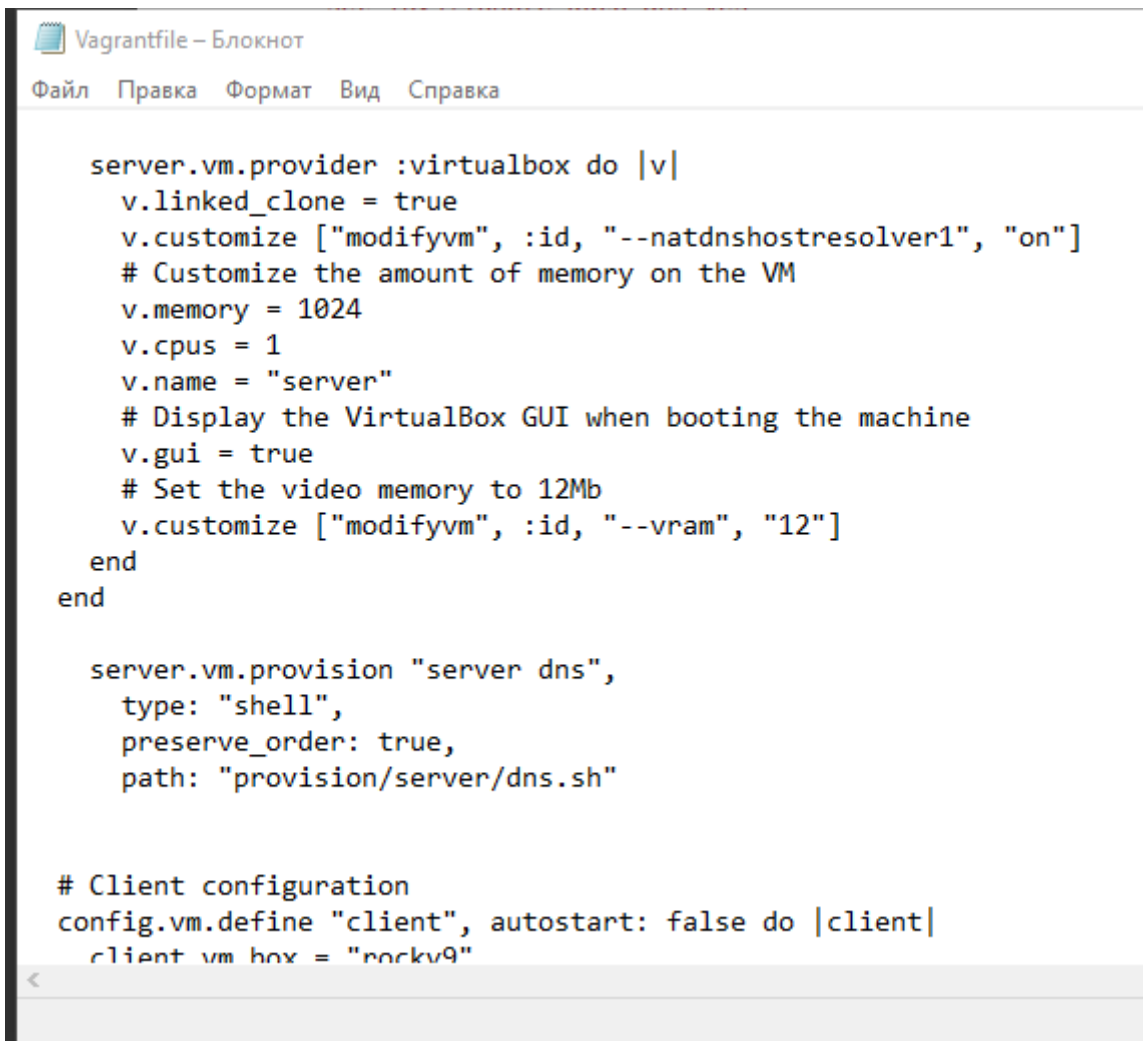
chown -R named:named /etc/named
chown -R named:named /var/named

restorecon -vR /etc
restorecon -vR /var/named

echo "Configure firewall"
firewall-cmd --add-service=dns
firewall-cmd --add-service=dns --permanent

echo "Tuning SELinux"
setsebool named_write_master_zones 1
```

Рис. 44. Скрипт (начало)



```
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
  # Set the video memory to 12Mb
  v.customize ["modifyvm", :id, "--vram", "12"]
end
end

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

# Client configuration
config.vm.define "client", autostart: false do |client|
  client.vm.box = "rocky9"
end
```

Рис. 45. Конф. файл Vagrantfile после редактирования