

Лабораторная работа №2

Настройка DNS-сервера

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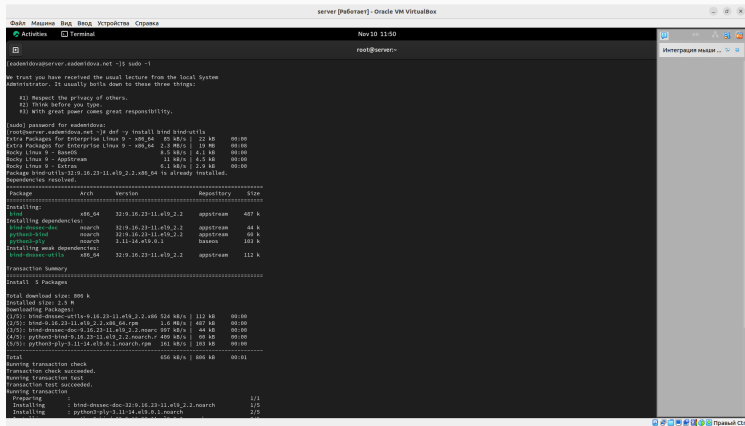
Вводная часть

Приобретение практических навыков по установке и конфигурированию DNS-сервера, усвоение принципов работы системы доменных имён.

1. Установите на виртуальной машине server DNS-сервер bind и bind-utils.
2. Сконфигурируйте на виртуальной машине server кэширующий DNS-сервер.
3. Сконфигурируйте на виртуальной машине server первичный DNS-сервер.
4. При помощи утилит dig и host проанализируйте работу DNS-сервера.
5. Напишите скрипт для Vagrant, фиксирующий действия по установке и конфигурированию DNS-сервера во внутреннем окружении виртуальной машины server. Соответствующим образом внесите изменения в Vagrantfile

Выполнение лабораторной работы

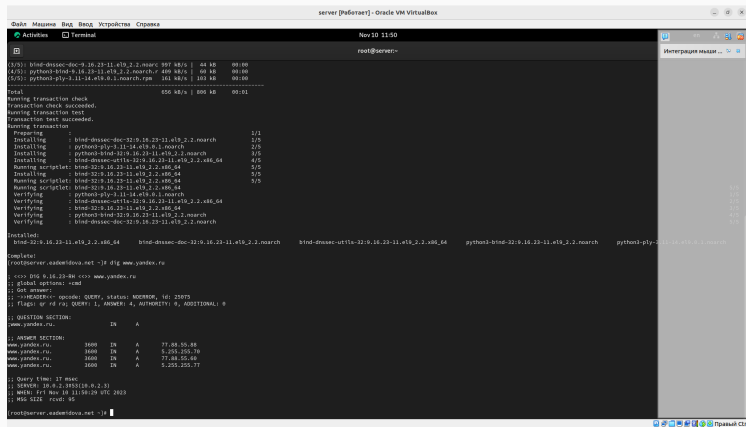
Установка DNS-сервера



```
server [root@server] - Oracle VM VirtualBox
Activities Terminal Nov 10 11:50
root@server:~
[root@server ~]# dnf -y install bind bind-utils
Extra Packages for Enterprise Linux 9 - x86_64 85 kB/s | 22 kB 00:00
Extra Packages for Enterprise Linux 9 - x86_64 2.9 MB/s | 13 MB 00:00
Rocky Linux 9 - BaseOS 8.5 MB/s | 4.1 kB 00:00
Rocky Linux 9 - AppStream 11 MB/s | 4.5 kB 00:00
Rocky Linux 9 - Extras 6.1 MB/s | 2.0 kB 00:00
Package bind-utils-32:9.16.23-11.el9_2.2.x86_64 is already installed.
Dependencies resolved.
=====
Package Arch Version Repository Size
Installing:
bind x86_64 32:9.16.23-11.el9_2.2 appstream 407 k
Installing dependencies:
bind-dnssec-dnssec 32:9.16.23-11.el9_2.2 appstream 44 k
python3-bind 32:9.16.23-11.el9_2.2 appstream 60 k
python3-ply 3.11-14.el9_0.1 baseos 103 k
Installing weak dependencies:
bind-dnssec-utils x86_64 32:9.16.23-11.el9_2.2 appstream 112 k
Transaction Summary
-----
Install 3 Packages
Total download size: 800 k
Installed size: 2.5 M
Downloading Packages:
(1/5): bind-dnssec-utils-9.16.23-11.el9_2.2.x86_64.rpm 112 kB/s | 112 kB 00:00
(2/5): bind-9.16.23-11.el9_2.2.x86_64.rpm 1.6 MB/s | 407 kB 00:00
(3/5): bind-dnssec-dnssec-9.16.23-11.el9_2.2.nearc 907 kB/s | 44 kB 00:00
(4/5): python3-bind-9.16.23-11.el9_2.2.nearc- 400 kB/s | 60 kB 00:00
(5/5): python3-ply-3.11-14.el9_0.1.nearc.rpm 101 kB/s | 103 kB 00:00
Total
-----
656 kB/s | 800 kB 00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Installing : bind-dnssec-dnssec-32:9.16.23-11.el9_2.2.nearc 1/5
Installing : python3-ply-3.11-14.el9_0.1.nearc 2/5
```

Рис. 1: Установка утилит на виртуальной машине server

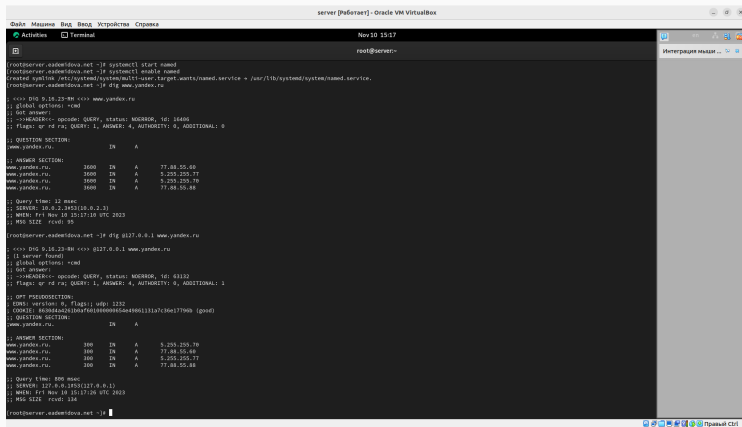
Установка DNS-сервера



```
server [Работает] - Oracle VM VirtualBox
Файл  Избранное  Вид  Ввод  Устройства  Справка
Activities  Terminal  Nov 10 11:50
root@server:~#
(3/5): bind-dnssec-doc-9.16.23-11.el9_2.2.noarch 907 kB/s | 44 kB 00:00
(4/5): python3-bind-9.16.23-11.el9_2.2.noarch.x 486 kB/s | 60 kB 00:00
(5/5): python3-ply-3.11-14.el9_8.1.noarch.rpm 161 kB/s | 103 kB 00:00
-----
Total: 526 kB/s | 805 kB 00:01
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing : 1/1
  Installing : bind-dnssec-doc-9.16.23-11.el9_2.2.noarch 1/5
  Installing : python3-ply-3.11-14.el9_8.1.noarch 2/5
  Installing : python3-bind-9.16.23-11.el9_2.2.noarch 3/5
  Installing : bind-dnssec-utils-9.16.23-11.el9_2.2.x86_64 4/5
  Running scriptlet: bind-9.16.23-11.el9_2.2.x86_64 5/5
  Installing : bind-9.16.23-11.el9_2.2.x86_64 5/5
  Running scriptlet: bind-9.16.23-11.el9_2.2.x86_64 5/5
  Running scriptlet: bind-9.16.23-11.el9_2.2.x86_64 5/5
  Verifying : python3-ply-3.11-14.el9_8.1.noarch 5/5
  Verifying : bind-dnssec-utils-9.16.23-11.el9_2.2.x86_64 5/5
  Verifying : bind-9.16.23-11.el9_2.2.x86_64 5/5
  Verifying : python3-bind-9.16.23-11.el9_2.2.noarch 4/5
  Verifying : bind-dnssec-doc-9.16.23-11.el9_2.2.noarch 3/5
Installed:
  bind-9.16.23-11.el9_2.2.x86_64      bind-dnssec-doc-9.16.23-11.el9_2.2.noarch      bind-dnssec-utils-9.16.23-11.el9_2.2.x86_64      python3-bind-9.16.23-11.el9_2.2.noarch      python3-ply-3.11-14.el9_8.1.noarch
Complete!
(root@server:~#dig @adewidova.net -tA dig www.yandex.ru)
;; global options: cmd
;; Got answer:
;; RESPONSE: opcode: QUERY, status: NOERROR, id: 25075
;; 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      77.88.55.88
www.yandex.ru.      3600    IN      A      5.255.255.76
www.yandex.ru.      3600    IN      A      77.88.55.68
www.yandex.ru.      3600    IN      A      5.255.255.77
;; Query time: 17 msec
;; SERVER: 10.0.2.3855(10.0.2.3)
;; WHEN: Fri Nov 10 11:50:29 UTC 2023
;; MSG SIZE rcvd: 95
(root@server:~#)
```

Рис. 2: Запрос к DNS-адресу www.yandex.ru

Конфигурирование кэширующего DNS-сервера



The screenshot shows a terminal window titled "server [Ru60raet] - Oracle VM VirtualBox" with a date and time of "Nov 10 15:17". The user is logged in as "root@server:". The terminal output shows the following commands and their results:

```
root@server:~# systemctl start named
root@server:~# systemctl enable named
Created symlink /etc/systemd/system/multi-user.target.wants/named.service → /usr/lib/systemd/system/named.service.
root@server:~# dig www.yandex.ru

; <<< Dig 9.16.23-8H <<< www.yandex.ru
; global options: <cmd>
; Got answer!
;->HEADER<: opcode: QUERY, status: NOERROR, id: 16406
; 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       77.88.55.48
www.yandex.ru.      3600    IN      A       5.253.255.77
www.yandex.ru.      3600    IN      A       5.253.255.76
www.yandex.ru.      3600    IN      A       77.88.55.88

; Query time: 12 msec
; SERVER: 10.0.2.145(10.0.2.3)
; WHEN: Fri Nov 10 15:17:10 UTC 2023
; MSG SIZE rcvd: 85

root@server:~# dig @127.0.0.1 www.yandex.ru

; <<< Dig 9.16.23-8H <<< @127.0.0.1 www.yandex.ru
; (1 server found)
; global options: <cmd>
; Got answer!
;->HEADER<: opcode: QUERY, status: NOERROR, id: 63182
; Flags: qr rd ra; QUERY: 1, ANSWER: 4, AUTHORITY: 0, ADDITIONAL: 1

; OPT PSEUDOSECTION:
; EDNS: version: 0, flags: udp: 1232
; COOKIE: 463044a241b3f60100000050e4966131a7c36e17790b (good)
; QUESTION SECTION:
; www.yandex.ru.                IN      A

; ANSWER SECTION:
www.yandex.ru.      360    IN      A       5.253.255.76
www.yandex.ru.      360    IN      A       77.88.55.48
www.yandex.ru.      360    IN      A       5.253.255.77
www.yandex.ru.      360    IN      A       77.88.55.88

; Query time: 800 msec
; SERVER: 127.0.0.1(127.0.0.1)
; WHEN: Fri Nov 10 15:17:26 UTC 2023
; MSG SIZE rcvd: 124

root@server:~#
```

Рис. 3: Запуск dns-сервера и выполнение команд dig

Конфигурирование кэширующего DNS-сервера

```
[root@server.eadimidova.net ~]# nmcli connection edit eth0

===| nmcli interactive connection editor |===

Editing existing '802-3-ethernet' connection: '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), 802-1x, dcb, sriov, ethtool, match, ipv4, ipv6, hostname, tc, proxy
nmcli> remove ipv4.dns
nmcli> set ipv4.ignore-auto-dns yes
nmcli> set ipv4.dns 127.0.0.1
nmcli> save
Connection 'eth0' (7e9d53f3-08ca-4107-918c-dd8379b0a5e4) successfully updated.
nmcli> quit
[root@server.eadimidova.net ~]# nmcli connection edit System\ eth0

===| nmcli interactive connection editor |===

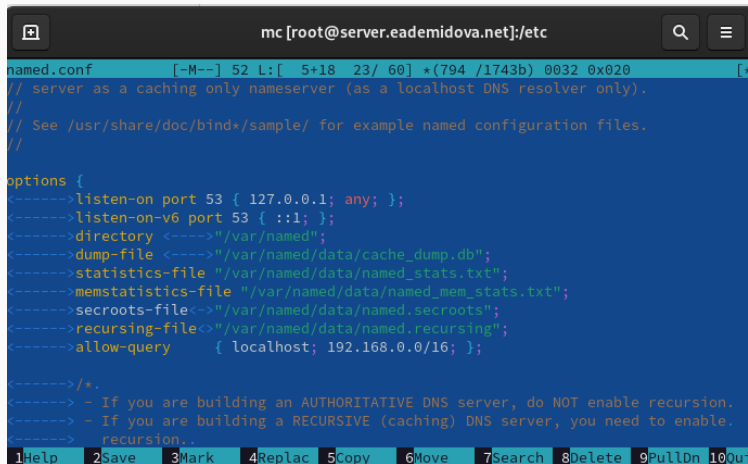
Editing existing '802-3-ethernet' connection: 'System eth0'

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), 802-1x, dcb, sriov, ethtool, match, ipv4, ipv6, hostname, tc, proxy
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.eadimidova.net ~]# systemctl restart NetworkManager
[root@server.eadimidova.net ~]# cat /etc/resolv.conf
# Generated by NetworkManager
search eadimidova.net
nameserver 127.0.0.1
[root@server.eadimidova.net ~]#
```

Рис. 4: Изменение адреса сервера

Конфигурирование кэширующего DNS-сервера



```
mc [root@server.eademidova.net]:/etc
named.conf [-M--] 52 L: [ 5+18 23/ 60] *(794 /1743b) 0032 0x020
// 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; 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; };

<----->/*.
<----->- If you are building an AUTHORITATIVE DNS server, do NOT enable recursion.
<----->- If you are building a RECURSIVE (caching) DNS server, you need to enable.
<----->recursion..
1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9PullDn 10Quit
```

Рис. 5: Настройка направления DNS-запросов от всех узлов внутренней сети

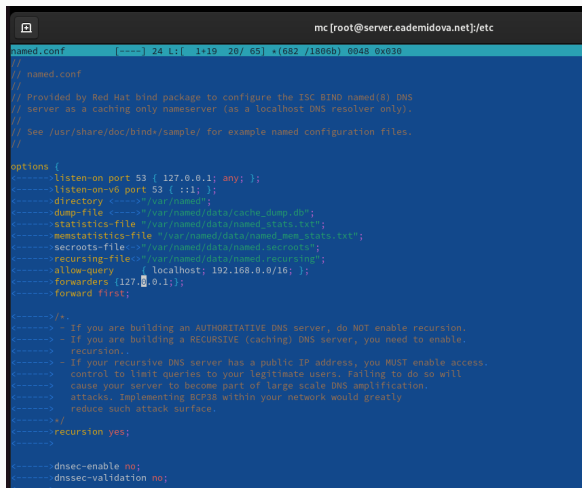
Конфигурирование кэширующего DNS-сервера

```
[root@server.eademidova.net ~]# nc etc/named.conf

[root@server.eademidova.net etc]# firewall-cmd --add-service=dns
success
[root@server.eademidova.net etc]# firewall-cmd --add-service=dns --permanent
success
[root@server.eademidova.net etc]# sof | grep UDP
bash: sof: command not found...
[root@server.eademidova.net etc]# lsof | grep UDP
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1001/gvfs
Output information may be incomplete.
avahi-dae 562          avahi 12u IPv4      18774 0t0      UDP *:mdns
avahi-dae 562          avahi 13u IPv6      18775 0t0      UDP *:mdns
avahi-dae 562          avahi 14u IPv4      18776 0t0      UDP *:45613
avahi-dae 562          avahi 15u IPv6      18777 0t0      UDP *:52048
chronyd 583           chrony 5u IPv4      18629 0t0      UDP localhost:323
chronyd 583           chrony 6u IPv6      18630 0t0      UDP localhost:323
named 10369          named 16u IPv4      75512 0t0      UDP localhost:domain
named 10369          named 19u IPv6      75514 0t0      UDP localhost:domain
named 10369 10370 isc-net-0 named 16u IPv4      75512 0t0      UDP localhost:domain
named 10369 10370 isc-net-0 named 19u IPv6      75514 0t0      UDP localhost:domain
named 10369 10371 isc-timer named 16u IPv4      75512 0t0      UDP localhost:domain
named 10369 10371 isc-timer named 19u IPv6      75514 0t0      UDP localhost:domain
named 10369 10372 isc-socket named 16u IPv4      75512 0t0      UDP localhost:domain
named 10369 10372 isc-socket named 19u IPv6      75514 0t0      UDP localhost:domain
named 10369 10403 isc-net-0 named 16u IPv4      75512 0t0      UDP localhost:domain
named 10369 10403 isc-net-0 named 19u IPv6      75514 0t0      UDP localhost:domain
NetworkMa 10582      root 27u IPv4      78208 0t0      UDP server.eademidova.net:bootpc->_gateway:bootps
NetworkMa 10582 10588 gmain      root 27u IPv4      78208 0t0      UDP server.eademidova.net:bootpc->_gateway:bootps
NetworkMa 10582 10589 gdbus      root 27u IPv4      78208 0t0      UDP server.eademidova.net:bootpc->_gateway:bootps
[root@server.eademidova.net etc]#
```

Рис. 6: Внесение изменения в настройки и проверка их корректности

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



```
mc [root@server.eademidova.net]:/etc
named.conf [----] 24 L: [ 1+19 20/ 65] *(682 /1806b) 0048 0x030
//
// 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; 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; };
<----->forwarders {127.0.0.1;};
<----->forward first;

<----->*/
<----->- If you are building an AUTHORITATIVE DNS server, do NOT enable recursion.
<----->- If you are building a RECURSIVE (caching) DNS server, you need to enable.
<----->recursion..
<----->- If your recursive DNS server has a public IP address, you MUST enable access.
<----->control to limit queries to your legitimate users. Failing to do so will
<----->cause your server to become part of large scale DNS amplification
<----->attacks. Implementing BCP38 within your network would greatly
<----->reduce such attack surface.
<----->*/
<----->recursion yes;
<----->
<----->dnsec-enable no;
<----->dnssec-validation no;
<----->
```

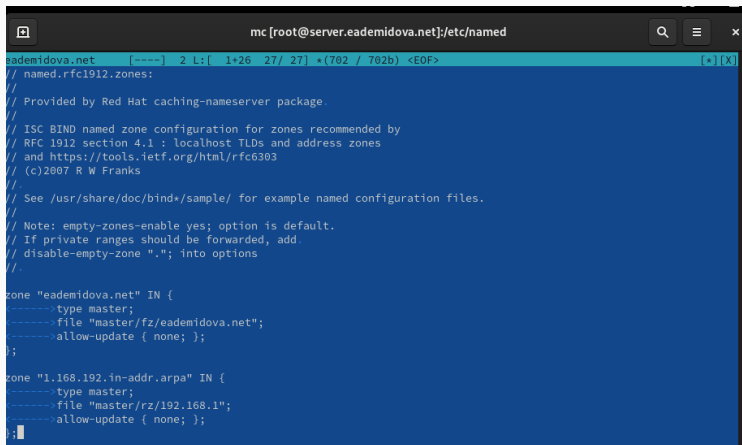
Рис. 7: Изменение файла named.conf

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



Рис. 8: Копирование и переименование файла DNS-зон

Конфигурирование первичного DNS-сервера



```
mc [root@server.eademidova.net]:/etc/named
eademidova.net [----] 2 L:[ 1+26 27/ 27] *(702 / 702b) <EOF> [*][X]
// named.rfc1912.zones:
//
// Provided by Red Hat caching-nameserver package.
//
// ISC BIND named zone configuration for zones recommended by
// 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 "eademidova.net" IN {
<----->type master;
<----->file "master/fz/eademidova.net";
<----->allow-update { none; };
};

zone "1.168.192.in-addr.arpa" IN {
<----->type master;
<----->file "master/rz/192.168.1";
<----->allow-update { none; };
};
```

Рис. 9: Изменение файла eademidova.net

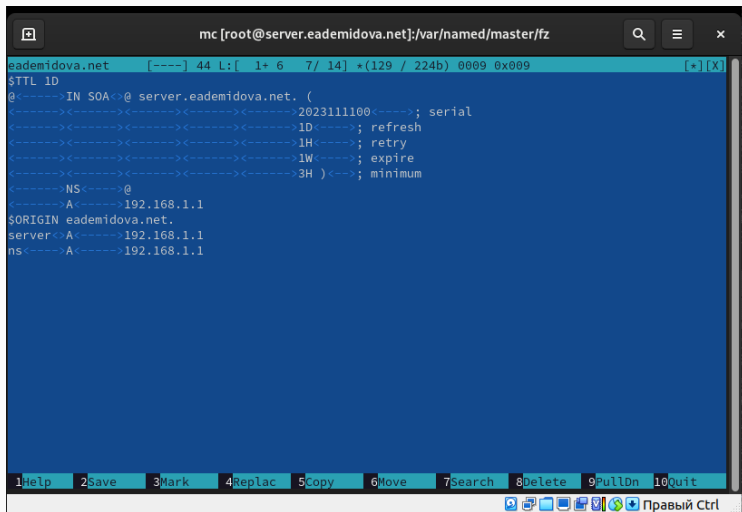
Конфигурирование первичного DNS-сервера

```
[root@server.eademidova.net etc]# cp /etc/named.rfc1912.zones /etc/named/  
[root@server.eademidova.net etc]# cd /etc/named/  
[root@server.eademidova.net named]# mv /etc/named/named.rfc1912.zones /etc/named/eademidova.net  
[root@server.eademidova.net named]# ls  
eademidova.net  
[root@server.eademidova.net named]# cd ..  
[root@server.eademidova.net etc]# mc  
  
[root@server.eademidova.net named]# cd /var/named  
[root@server.eademidova.net named]# mkdir -p /var/named/master/fz  
[root@server.eademidova.net named]# mkdir -p /var/named/master/rz  
[root@server.eademidova.net named]# cp /var/named/named.localhost /var/named/master/fz/  
[root@server.eademidova.net named]# cd /var/named/master/fz/  
[root@server.eademidova.net fz]# mv named.localhost eademidova.net  
[root@server.eademidova.net fz]#
```

 Правый Ctrl

Рис. 10: Добавление подкаталогов для файлов прямой и обратной зоны и копирование шаблона прямой зоны

Конфигурирование первичного DNS-сервера



```
mc [root@server.eademidova.net]:/var/named/master/fz
eademidova.net  [----] 44 L:[ 1+ 6 7/ 14] *(129 / 224b) 0009 0x009 [*][X]
$TTL 1D
@<----->IN SOA<@ server.eademidova.net. (
<-----><-----><-----><-----><----->2023111100<----->; serial
<-----><-----><-----><-----><----->1D<----->; refresh
<-----><-----><-----><-----><----->1H<----->; retry
<-----><-----><-----><-----><----->1W<----->; expire
<-----><-----><-----><-----><----->3H )<--->; minimum
<----->NS<----->@
<----->A<----->192.168.1.1
$ORIGIN eademidova.net.
server<>A<----->192.168.1.1
ns<----->A<----->192.168.1.1

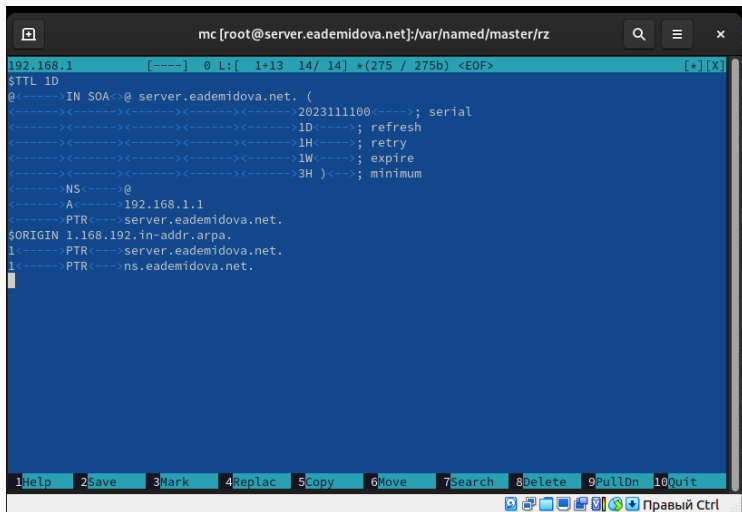
1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8Delete 9PullDn 10Quit
Правый Ctrl
```

Рис. 11: Изменение файла прямой зоны


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

Рис. 12: Копирование и переименования шаблона обратной DNS-зоны

Конфигурирование первичного DNS-сервера



```
mc [root@server.eademidova.net]:/var/named/master/rz
192.168.1 [----] 0 L:[ 1+13 14/ 14] *(275 / 275b) <EOF> [*][X]
$TTL 1D
@<----->IN SOA<@ server.eademidova.net. (
<-----><-----><-----><-----><----->2023111100<----->; serial
<-----><-----><-----><-----><----->1D<----->; refresh
<-----><-----><-----><-----><----->1H<----->; retry
<-----><-----><-----><-----><----->1W<----->; expire
<-----><-----><-----><-----><----->3H )<--->; minimum
<----->NS<----->@
<----->A<----->192.168.1.1
<----->PTR<--->server.eademidova.net.
$ORIGIN 1.168.192.in-addr.arpa.
1<----->PTR<--->server.eademidova.net.
1<----->PTR<--->ns.eademidova.net.

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

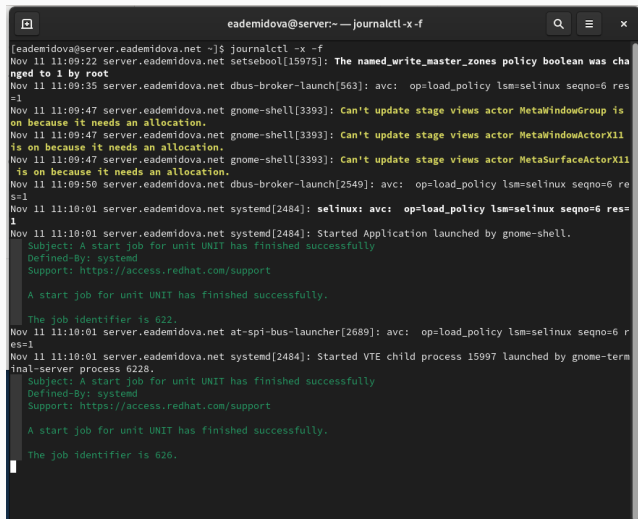
Рис. 13: Изменение файла обратной зоны

Конфигурирование первичного DNS-сервера

```
root@server.eademidova.net rz]# chown -R named:named /etc/named
root@server.eademidova.net rz]# chown -R named:named /var/named
root@server.eademidova.net rz]# restorecon -vR /etc
labeled /etc/sysconfig/network-scripts/ifcfg-eth1 from unconfined_u:object_r:user_tmp_t:s0 to unconfined_u:obje
t_r:net_conf_t:s0
root@server.eademidova.net rz]# restorecon -vR /var/named
root@server.eademidova.net rz]# getsebool -a | grep named
named_tcp_bind_http_port --> off
named_write_master_zones --> on
```

Рис. 14: Восстановление меток безопасности и проверка состояния переключателей в SELinux

Конфигурирование первичного DNS-сервера



```
eademidova@server:~ — journalctl -x -f
[eademidova@server.eademidova.net ~]$ journalctl -x -f
Nov 11 11:09:22 server.eademidova.net setsebool[15975]: The named_write_master_zones policy boolean was changed to 1 by root
Nov 11 11:09:35 server.eademidova.net dbus-broker-launch[563]: avc: op=load_policy lsm=selinux seqno=6 res=1
Nov 11 11:09:47 server.eademidova.net gnome-shell[3393]: Can't update stage views actor MetaWindowGroup is on because it needs an allocation.
Nov 11 11:09:47 server.eademidova.net gnome-shell[3393]: Can't update stage views actor MetaWindowActorX11 is on because it needs an allocation.
Nov 11 11:09:47 server.eademidova.net gnome-shell[3393]: Can't update stage views actor MetaSurfaceActorX11 is on because it needs an allocation.
Nov 11 11:09:50 server.eademidova.net dbus-broker-launch[2549]: avc: op=load_policy lsm=selinux seqno=6 res=1
Nov 11 11:10:01 server.eademidova.net systemd[2484]: selinux: avc: op=load_policy lsm=selinux seqno=6 res=1
Nov 11 11:10:01 server.eademidova.net systemd[2484]: Started Application launched by gnome-shell.
  Subject: A start job for unit UNIT has finished successfully
  Defined-By: systemd
  Support: https://access.redhat.com/support

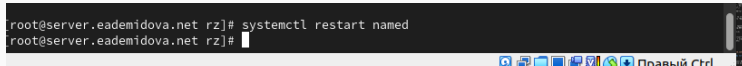
  A start job for unit UNIT has finished successfully.

  The job identifier is 622.
Nov 11 11:10:01 server.eademidova.net at-spi-bus-launcher[2689]: avc: op=load_policy lsm=selinux seqno=6 res=1
Nov 11 11:10:01 server.eademidova.net systemd[2484]: Started VTE child process 15997 launched by gnome-terminal-server process 6228.
  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 626.
```

Рис. 15: Запуск расширенного лога системных сообщений

A terminal window with a black background and white text. The prompt is [root@server.eademidova.net rz]#. The command systemctl restart named has been entered. The prompt is now [root@server.eademidova.net rz]# with a cursor. The window has a standard Linux desktop taskbar at the bottom with various icons and the text "Правый Ctrl".

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

Рис. 16: Перезапуск DNS-сервера

```
[root@server.eademidova.net rz]# systemctl restart named
[root@server.eademidova.net rz]# dig ns.eademidova.net

<<>> DiG 9.16.23-RH <<>> ns.eademidova.net
; global options: +cmd
; Got answer:
; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 53214
; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 0ef31f90d05737d01000000654f671a5101a42f7026ed8f (good)
; QUESTION SECTION:
ns.eademidova.net.          IN      A

; ANSWER SECTION:
ns.eademidova.net.        86400   IN      A      192.168.1.1

; Query time: 0 msec
; SERVER: 127.0.0.1#53(127.0.0.1)
; WHEN: Sat Nov 11 11:35:54 UTC 2023
; MSG SIZE rcvd: 90

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

Рис. 17: Описание DNS-зоны с сервера ns.eademidova.net

```
[root@server.eademidova.net rz]# host -l eademidova.net
eademidova.net name server eademidova.net.
eademidova.net has address 192.168.1.1
ns.eademidova.net has address 192.168.1.1
server.eademidova.net has address 192.168.1.1
[root@server.eademidova.net rz]# host -a eademidova.net
Trying "eademidova.net"
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 13333
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

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

;; ANSWER SECTION:
eademidova.net.      86400   IN      SOA      eademidova.net. server.eademidova.net. 20231111100 86400 3600 604800 10800
eademidova.net.      86400   IN      NS       eademidova.net.
eademidova.net.      86400   IN      A        192.168.1.1

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

Received 121 bytes from 127.0.0.1#53 in 0 ms
[root@server.eademidova.net rz]# host -t A eademidova.net
eademidova.net has address 192.168.1.1
[root@server.eademidova.net rz]# host -t PTR 192.168.1.1
1.1.168.192.in-addr.arpa domain name pointer ns.eademidova.net.
1.1.168.192.in-addr.arpa domain name pointer server.eademidova.net.
[root@server.eademidova.net rz]#
```

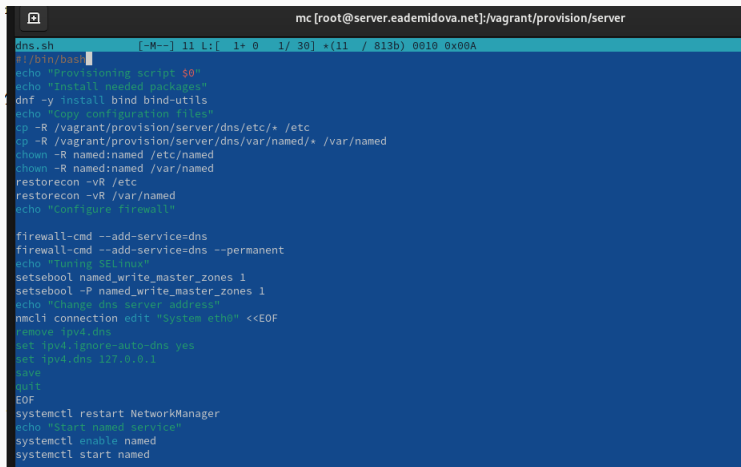
Рис. 18: Проверка корректности работы DNS-сервера

Внесение изменений в настройки внутреннего окружения виртуальной машины

```
11.100.132.11:~$ ssh -o Port=2222 root@server.eademidova.net
[root@server.eademidova.net ~]# cd /vagrant
[root@server.eademidova.net vagrant]# mkdir -p /vagrant/provision/server/dns/etc/named
[root@server.eademidova.net vagrant]# mkdir -p /vagrant/provision/server/dns/var/named/master/
[root@server.eademidova.net vagrant]# cp -R /etc/named.conf /vagrant/provision/server/dns/etc/
[root@server.eademidova.net vagrant]# cp -R /etc/named/* /vagrant/provision/server/dns/etc/named/
[root@server.eademidova.net vagrant]# cp -R /var/named/master/* /vagrant/provision/server/dns/var/named/master/
[root@server.eademidova.net vagrant]# touch dns.sh
[root@server.eademidova.net vagrant]# cd provision/server/
[root@server.eademidova.net server]# touch dns.sh
[root@server.eademidova.net server]# chmod +x dns.sh
[root@server.eademidova.net server]#
```

Рис. 19: Создание каталога dns и перенос в него файлов, создание dns.sh

Внесение изменений в настройки внутреннего окружения виртуальной машины



```
mc [root@server.eademidova.net]:/vagrant/provision/server

dns.sh  [-M--] 11 L:[ 1+ 0 1/ 30] *(11 / 813b) 0010 0x00A
#!/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
setsebool -P named_write_master_zones 1
echo "Change dns server address"
nmcli connection edit "System eth0" <<EOF
remove ipv4.dns
set ipv4.ignore-auto-dns yes
set ipv4.dns 127.0.0.1
save
quit
EOF
systemctl restart NetworkManager
echo "Start named service"
systemctl enable named
systemctl start named
```

Рис. 20: Изменение файла dns.sh

Внесение изменений в настройки внутреннего окружения виртуальной машины

```
[root@server.eademidova.net rz]# host -l eademidova.net
eademidova.net name server eademidova.net.
eademidova.net has address 192.168.1.1
ns.eademidova.net has address 192.168.1.1
server.eademidova.net has address 192.168.1.1
[root@server.eademidova.net rz]# host -a eademidova.net
Trying "eademidova.net"
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 13333
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

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

;; ANSWER SECTION:
eademidova.net.      86400   IN      SOA      eademidova.net. server.eademidova.net. 2023111100 86400 3600 604800 10800
eademidova.net.      86400   IN      NS       eademidova.net.
eademidova.net.      86400   IN      A        192.168.1.1

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

Received 121 bytes from 127.0.0.1#53 in 0 ms
[root@server.eademidova.net rz]# host -t A eademidova.net
eademidova.net has address 192.168.1.1
[root@server.eademidova.net rz]# host -t PTR 192.168.1.1
1.1.168.192.in-addr.arpa domain name pointer ns.eademidova.net.
1.1.168.192.in-addr.arpa domain name pointer server.eademidova.net.
[root@server.eademidova.net rz]#
```

Рис. 21: Изменение файла Vagrantfile

Заключение

В результате выполнения данной работы были приобретены практические навыки по установке и конфигурированию DNS-сервера, усвоение принципов работы системы доменных имён.