

Настройка DNS-сервера

Лабораторная работа №2

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Цели и задачи работы

Цель лабораторной работы

Приобретение практических навыков установки и конфигурирования DNS-сервера на базе BIND, а также изучение принципов работы системы доменных имён.

Выполнение работы

Установка DNS-сервера

На виртуальной машине server выполнена установка пакетов bind и bind-utils.

В процессе установки были автоматически разрешены зависимости и подготовлена среда для работы DNS-сервера.

```
[sudo] password for elsaiedadel:  
[root@server.elsaiedadel.net ~]# dnf -y install bind bind-utils  
Last metadata expiration check: 0:08:47 ago on Fri 02 Jan 2026 08:58:24 AM UTC.  
Package bind-utils-32:9.18.33-10.el10_1.2.x86_64 is already installed.  
Dependencies resolved.  
=====  
           Package          Architecture      Version       Repository  Size  
=====  
Installing:  
  bind                   x86_64          32:9.18.33-10.el10_1.2      appstream  333 k  
Installing weak dependencies:  
  bind-dnssec-utils     x86_64          32:9.18.33-10.el10_1.2      appstream  151 k  
  
Transaction Summary  
=====  
Install 2 Packages  
  
Total download size: 483 k  
Installed size: 1.3 M  
Downloading Packages:  
(1/2): bind-dnssec-utils-9.18.33-10.el10_1.2.x86_64.rpm           1.9 MB/s | 151 kB   00:00  
(2/2): bind-9.18.33-10.el10_1.2.x86_64.rpm                         2.6 MB/s | 333 kB   00:00  
=====  
Total                                         923 kB/s | 483 kB   00:00  
  
Running transaction check  
Transaction check succeeded.  
Running transaction test  
Transaction test succeeded.  
Running transaction  
  Preparing          : 1/1  
  Installing        : bind-dnssec-utils-32:9.18.33-10.el10_1.2.x86_64 1/2  
  Running scriptlet: bind-32:9.18.33-10.el10_1.2.x86_64             2/2
```

Проверка DNS-разрешения

Для проверки работы DNS-клиента выполнен запрос к доменному имени www.yandex.ru. Получен корректный ответ со статусом NOERROR и набором A-записей.

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

; <>> DiG 9.18.33 <>> www.yandex.ru
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 14492
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; udp: 512
;; QUESTION SECTION:
;www.yandex.ru.           IN      A

;; ANSWER SECTION:
www.yandex.ru.      56      IN      A      5.255.255.77
www.yandex.ru.      56      IN      A      77.88.44.55
www.yandex.ru.      56      IN      A      77.88.55.88

;; Query time: 28 msec
;; SERVER: 10.0.2.3#53(10.0.2.3) (UDP)
;; WHEN: Fri Jan 02 09:07:40 UTC 2026
;; MSG SIZE  rcvd: 90
```

Анализ конфигурационных файлов

Проанализированы основные конфигурационные файлы DNS: - /etc/resolv.conf – настройки DNS-клиента; - /etc/named.conf – основная конфигурация BIND.

```
[root@server.elsaiedadel.net ~]#  
[root@server.elsaiedadel.net ~]# cat /etc/resolv.conf  
# Generated by NetworkManager  
search elsaiedadel.net  
nameserver 10.0.2.3  
[root@server.elsaiedadel.net ~]# cat /etc/named.conf  
//  
// 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 recursion.  
     - If you are building a RECURSIVE (caching) DNS server, you need to enable  
       recursion.  
     If you are recursive, DNS queries for a public IP address... you MUST enable recursion!  
    */
```

Корневые DNS-серверы

Рассмотрен файл named.ca, содержащий сведения о корневых DNS-серверах Интернета, используемых для инициализации DNS-кэша.

```
[root@server.elsaiedadel.net ~]#  
[root@server.elsaiedadel.net ~]# cat /var/named/named.ca  
;  
; This file holds the information on root name servers needed to  
; initialize cache of Internet domain name servers  
; (e.g. reference this file in the "cache . <file>"  
; configuration file of BIND domain name servers).  
;  
;  
; This file is made available by InterNIC  
; under anonymous FTP as  
;  
;     file          /domain/named.cache  
;     on server      FTP.INTERNIC.NET  
;     -OR-           RS.INTERNIC.NET  
;  
;  
;     last update:   December 20, 2023  
;     related version of root zone:   2023122001  
;  
;  
; FORMERLY NS.INTERNIC.NET  
;  
;  
.;          3600000    NS    A.ROOT-SERVERS.NET.  
A.ROOT-SERVERS.NET. 3600000    A    198.41.0.4  
A.ROOT-SERVERS.NET. 3600000    AAAA  2001:503:ba3e::2:30  
;  
;  
; FORMERLY NS1.ISI.EDU  
;  
;  
.;          3600000    NS    B.ROOT-SERVERS.NET.  
B.ROOT-SERVERS.NET. 3600000    A    170.247.170.2  
B.ROOT-SERVERS.NET. 3600000    AAAA  2801:1b8:10::b
```

Локальные зоны

Проанализированы файлы named.localhost и named.loopback, обеспечивающие корректную работу локального DNS-разрешения.

```
[root@server.elsaiedadel.net ~]# cat /var/named/named.localhost
$TTL 1D
@      IN SOA  @ rname.invalid. (
                                0      ; serial
                                1D     ; refresh
                                1H     ; retry
                                1W     ; expire
                                3H )   ; minimum
NS      @
A       127.0.0.1
AAAA    ::1
[root@server.elsaiedadel.net ~]# cat /var/named/named.loopback
$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.
```

Проверка локального DNS-сервера

Выполнен DNS-запрос с явным указанием локального сервера 127.0.0.1.

Полученный ответ показал необходимость дополнительной настройки сервера.

```
[root@server.elsaiedadel.net ~]#  
[root@server.elsaiedadel.net ~]# dig @127.0.0.1 www.yandex.ru  
  
; <>> DiG 9.18.33 <>> @127.0.0.1 www.yandex.ru  
; (1 server found)  
;; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: SERVFAIL, id: 11124  
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 1232  
; COOKIE: b322f7f10df2b23c0100000069578c16b29105ec077c44b1 (good)  
;; QUESTION SECTION:  
;www.yandex.ru.           IN      A  
  
;; Query time: 4058 msec  
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)  
;; WHEN: Fri Jan 02 09:12:54 UTC 2026  
;; MSG SIZE  rcvd: 70  
  
[root@server.elsaiedadel.net ~]#
```

Настройка DNS по умолчанию

Сетевое соединение eth0 настроено на использование DNS-сервера 127.0.0.1.

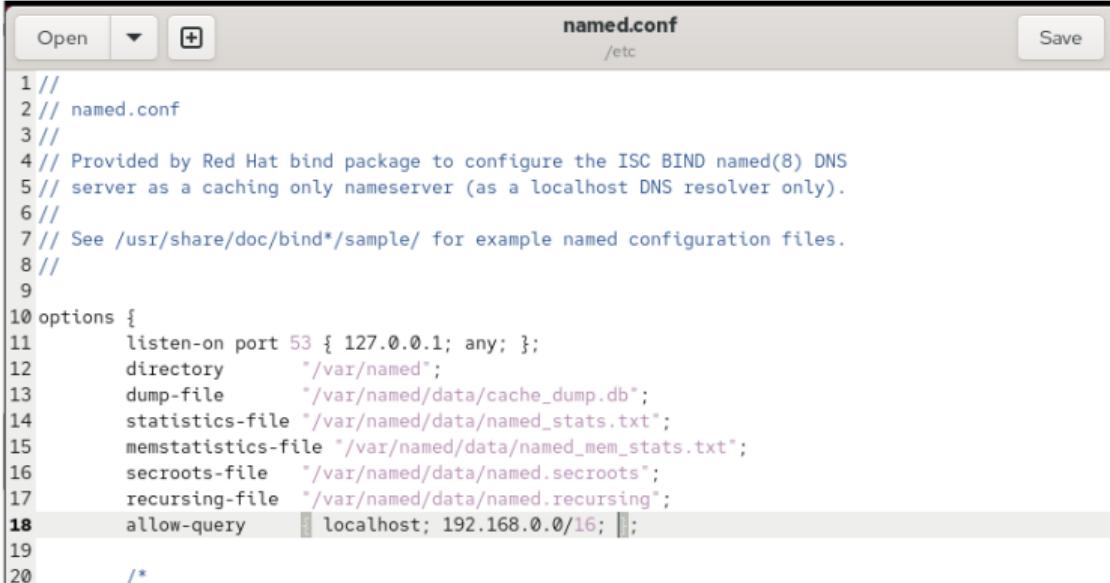
Изменения подтверждены в файле resolv.conf.

```
[root@server.elsaiedadel.net ~]#  
[root@server.elsaiedadel.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, prefix-delegation, hostname, link, 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' (e292e83a-7750-4087-b4e1-a998fc55c0ea) successfully updated.  
nmcli> quit  
[root@server.elsaiedadel.net ~]# systemctl restart NetworkManager  
[root@server.elsaiedadel.net ~]# cat /etc/resolv.conf  
# Generated by NetworkManager  
search elsaiedadel.net  
nameserver 127.0.0.1  
[root@server.elsaiedadel.net ~]#
```

Рис. 7: Настройка NetworkManager

Разрешение запросов из сети

В файле named.conf разрешена обработка DNS-запросов от внутренней сети и включено прослушивание всех интерфейсов.



The screenshot shows a text editor window titled "named.conf" located at "/etc". The file contains a configuration for a DNS server. Line 18, which defines the "allow-query" directive, is highlighted with a gray background. The configuration includes options for listening on port 53, setting the directory to "/var/named", defining dump and statistics files, and specifying root keys. The "allow-query" directive is set to accept queries from the local host and the subnet 192.168.0.0/16.

```
1 //
2 // named.conf
3 //
4 // Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
5 // server as a caching only nameserver (as a localhost DNS resolver only).
6 //
7 // See /usr/share/doc/bind*/sample/ for example named configuration files.
8 //
9
10 options {
11     listen-on port 53 { 127.0.0.1; any; };
12     directory      "/var/named";
13     dump-file      "/var/named/data/cache_dump.db";
14     statistics-file "/var/named/data/named_stats.txt";
15     memstatistics-file "/var/named/data/named_mem_stats.txt";
16     secroots-file  "/var/named/data/named.secroots";
17     recursing-file "/var/named/data/named.recurse";
18     allow-query    { localhost; 192.168.0.0/16; };
19
20 /*
```

Рис. 8: Изменение named.conf

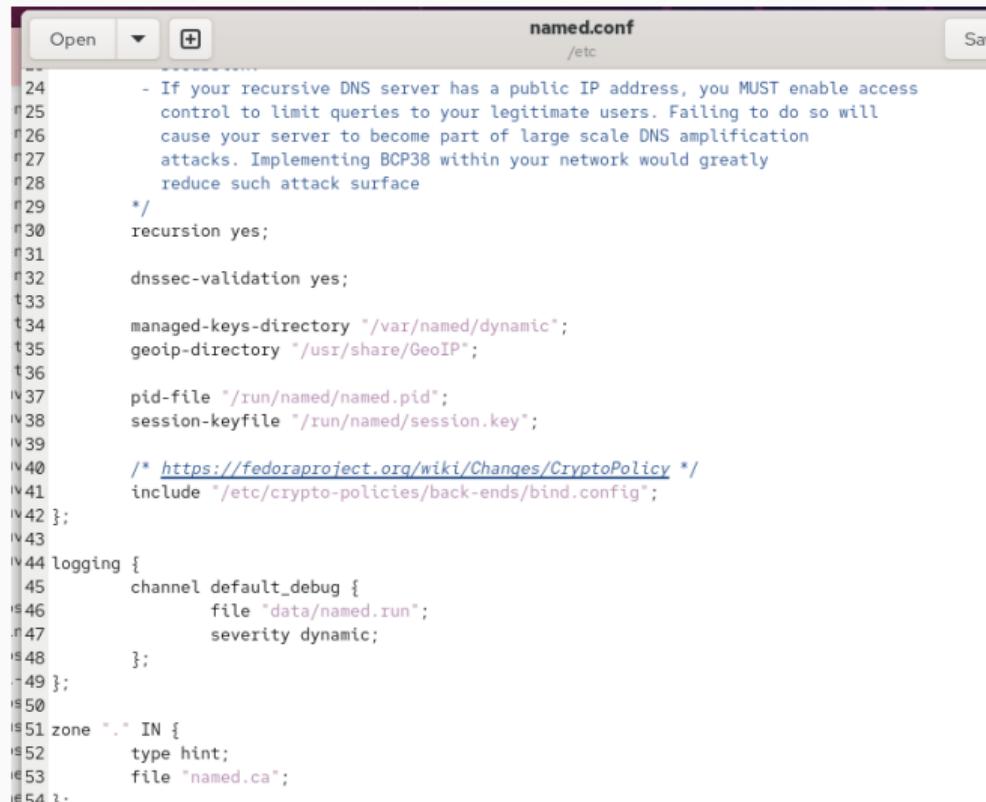
Проверка работы службы named

Проверено, что демон named прослушивает UDP-порт 53 и корректно обрабатывает DNS-запросы.

```
[root@server.elsaiedadel.net ~]# firewall-cmd --add-service=dns
success
[root@server.elsaiedadel.net ~]# firewall-cmd --add-service=dns --permanent
success
[root@server.elsaiedadel.net ~]# lsof | grep UDP
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1001/gvfs
      Output information may be incomplete.
lsof: WARNING: can't stat() fuse.portal file system /run/user/1001/doc
      Output information may be incomplete.
avahi-dae 1090                  avahi  12u   IPv4          8944  0t0    UDP *:mdns
avahi-dae 1090                  avahi  13u   IPv6          8945  0t0    UDP *:mdns
chronynd 1159                   chrony  5u   IPv4         10196  0t0    UDP localhost:323
chronynd 1159                   chrony  6u   IPv6         10197  0t0    UDP localhost:323
named    14085                  named  25u   IPv4          54250  0t0    UDP localhost:domain
named    14085                  named  26u   IPv4          54251  0t0    UDP localhost:domain
named    14085                  named  31u   IPv6          54254  0t0    UDP localhost:domain
named    14085                  named  32u   IPv6          54255  0t0    UDP localhost:domain
named    14085 14086 isc-net-0   named  25u   IPv4          54250  0t0    UDP localhost:domain
named    14085 14086 isc-net-0   named  26u   IPv4          54251  0t0    UDP localhost:domain
named    14085 14086 isc-net-0   named  31u   IPv6          54254  0t0    UDP localhost:domain
named    14085 14086 isc-net-0   named  32u   IPv6          54255  0t0    UDP localhost:domain
named    14085 14087 isc-net-0   named  25u   IPv4          54250  0t0    UDP localhost:domain
named    14085 14087 isc-net-0   named  26u   IPv4          54251  0t0    UDP localhost:domain
named    14085 14087 isc-net-0   named  31u   IPv6          54254  0t0    UDP localhost:domain
named    14085 14087 isc-net-0   named  32u   IPv6          54255  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  25u   IPv4          54250  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  26u   IPv4          54251  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  31u   IPv6          54254  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  32u   IPv6          54255  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  25u   IPv4          54250  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  26u   IPv4          54251  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  31u   IPv6          54254  0t0    UDP localhost:domain
named    14085 14088 isc-net-0   named  32u   IPv6          54255  0t0    UDP localhost:domain
named    14085 14089 isc-net-0   named  25u   IPv4          54250  0t0    UDP localhost:domain
named    14085 14089 isc-net-0   named  26u   IPv4          54251  0t0    UDP localhost:domain
```

Описание DNS-зон

Создан файл описания зон elsaiedadel.net и подключён в основной конфигурации named.



The screenshot shows a text editor window with the title "named.conf /etc". The file contains a BIND configuration script. The code is color-coded: comments are in blue, sections like "recursion yes;" and "dnssec-validation yes;" are in green, and specific paths like "/var/named/dynamic" and "/usr/share/GeoIP" are in purple. The configuration includes a recursive resolver section, DNSSEC validation, and logging settings. It also includes a zone definition for the root zone ("."). The file ends with a closing brace for the main configuration block.

```
Open ▾ + named.conf /etc Save
24      - If your recursive DNS server has a public IP address, you MUST enable access
25          control to limit queries to your legitimate users. Failing to do so will
26          cause your server to become part of large scale DNS amplification
27          attacks. Implementing BCP38 within your network would greatly
28          reduce such attack surface
29      */
30      recursion yes;
31
32      dnssec-validation yes;
33
34      managed-keys-directory "/var/named/dynamic";
35      geoip-directory "/usr/share/GeoIP";
36
37      pid-file "/run/named/named.pid";
38      session-keyfile "/run/named/session.key";
39
40      /* https://fedoraproject.org/wiki/Changes/CryptoPolicy */
41      include "/etc/crypto-policies/back-ends/bind.config";
42  };
43
44  logging {
45      channel default_debug {
46          file "data/named.run";
47          severity dynamic;
48      };
49  };
50
51  zone "." IN {
52      type hint;
53      file "named.ca";
54  };
```

Прямая и обратная зоны

Настроены: - прямая зона elsaiedadel.net; - обратная зона 1.168.192.in-addr.arpa.



The screenshot shows a terminal window with the title bar "elsaiedadel.net" and the path "/etc/named". The window contains the configuration file for the "elsaiedadel.net" zone. The code is as follows:

```
1 // named.rfc1912.zones:
2 //
3 // Provided by Red Hat caching-nameserver package
4 //
5 // ISC BIND named zone configuration for zones recommended by
6 // RFC 1912 section 4.1 : localhost TLDs and address zones
7 // and https://tools.ietf.org/html/rfc6303
8 // (c)2007 R W Franks
9 //
10 // See /usr/share/doc/bind*/sample/ for example named configuration files.
11 //
12 // Note: empty-zones-enable yes; option is default.
13 // If private ranges should be forwarded, add
14 // disable-empty-zone "."; into options
15 //
16
17 zone "elsaiedadel.net" IN {
18     type master;
19     file "master/fz/elsaiedadel.net";
20     allow-update { none; };
21 };
22
23 zone "1.168.192.in-addr.arpa" IN {
24     type master;
25     file "master/rz/192.168.1";
26     allow-update { none; };
27 };
28
```

Файл прямой зоны

В файле прямой зоны определены записи SOA, NS и A для домена elsaiedadel.net.

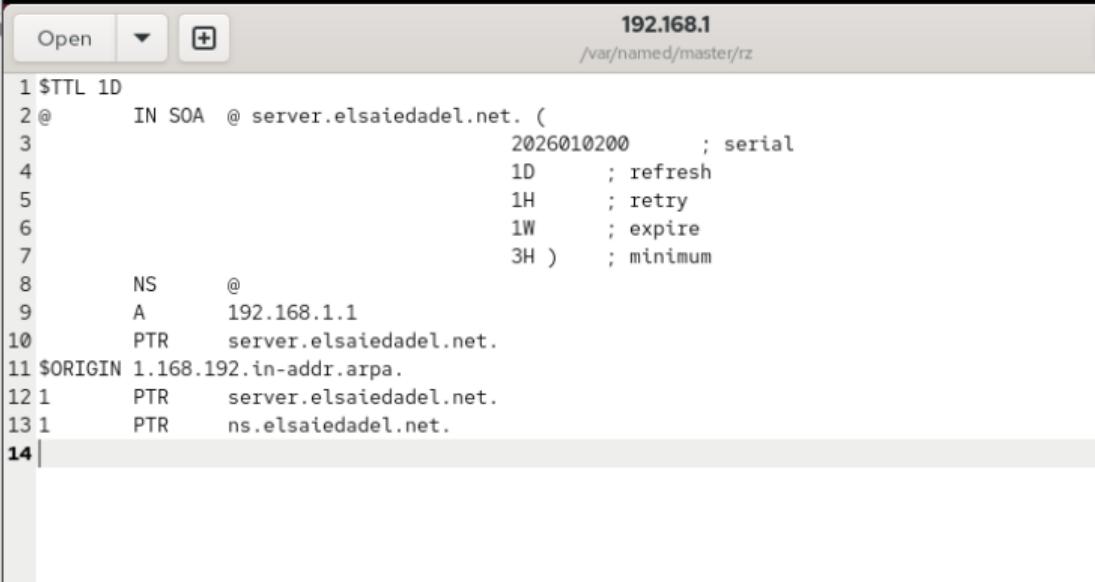
The screenshot shows a text editor window with the title bar "elsaiedadel.net /var/named/master/fz". The file contains the following DNS zone configuration:

```
1 $TTL 1D
2 @      IN SOA  @ server.elsaiedadel.net. (
3                               2026010200      ; serial
4                               1D            ; refresh
5                               1H            ; retry
6                               1W            ; expire
7                               3H )          ; minimum
8     NS      @
9     A      192.168.1.1
10 $ORIGIN elsaiedadel.net.
11 servar A      192.168.1.1
12 ns    A      192.168.1.1
13 |
```

Рис. 12: Прямая зона

Файл обратной зоны

В файле обратной зоны заданы PTR-записи для IP-адреса 192.168.1.1.



The screenshot shows a terminal window with the title "192.168.1" and the path "/var/named/master/rz". The window contains the following DNS zone configuration:

```
1 $TTL 1D
2 @      IN SOA  @ server.elsaiedadel.net. (
3                               2026010200      ; serial
4                               1D            ; refresh
5                               1H            ; retry
6                               1W            ; expire
7                               3H )          ; minimum
8     NS      @
9     A       192.168.1.1
10    PTR     server.elsaiedadel.net.
11 $ORIGIN 1.168.192.in-addr.arpa.
12 1    PTR     server.elsaiedadel.net.
13 1    PTR     ns.elsaiedadel.net.
14 |
```

Рис. 13: Обратная зона

SELinux и права доступа

Выполнена настройка прав доступа и восстановление контекстов безопасности SELinux для корректной работы named.

```
[root@server.elsaiedadel.net rz]# chown -R named:named /etc/named
[root@server.elsaiedadel.net rz]# chown -R named:named /var/named
[root@server.elsaiedadel.net rz]# restorecon -vR /etc
Relabeled /etc/NetworkManager/system-connections/eth1.nmconnection from unconfined_u:object_r:user_tmp_t:s0 to unconfined_u:object_r:NetworkManager_etc_rw_t:s0
Relabeled /etc/named.conf from unconfined_u:object_r:etc_t:s0 to unconfined_u:object_r:named_conf_t:s0
[root@server.elsaiedadel.net rz]# restorecon -vR /var/named/
[root@server.elsaiedadel.net rz]# getsebool -a | grep named
named_tcp_bind_http_port --> off
named_write_master_zones --> on
[root@server.elsaiedadel.net rz]# systemctl restart named
[root@server.elsaiedadel.net rz]#
```

Рис. 14: SELinux

Проверка dig

Выполнен запрос к ns.elsaiedadel.net.

Получен авторитетивный ответ от локального DNS-сервера.

```
[root@server.elsaiedadel.net rz]#  
[root@server.elsaiedadel.net rz]# dig ns.elsaiedadel.net  
  
; <>> DiG 9.18.33 <>> ns.elsaiedadel.net  
;; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 3309  
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 1232  
; COOKIE: f8f4853fef263133010000006957913eb071bc0354d335fe (good)  
;; QUESTION SECTION:  
;ns.elsaiedadel.net.          IN      A  
  
;; ANSWER SECTION:  
ns.elsaiedadel.net.    86400   IN      A      192.168.1.1  
  
;; Query time: 0 msec  
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)  
;; WHEN: Fri Jan 02 09:34:54 UTC 2026  
;; MSG SIZE  rcvd: 91
```

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

Проверка host

С помощью утилиты host проверены: - список записей зоны; - A-записи; - PTR-записи.

```
[root@server.elsaiedadel.net rz]# host -l elsaiedadel.net
elsaiedadel.net name server elsaiedadel.net.
elsaiedadel.net has address 192.168.1.1
ns.elsaiedadel.net has address 192.168.1.1
server.elsaiedadel.net has address 192.168.1.1
[root@server.elsaiedadel.net rz]# host -a elsaiedadel.net
Trying "elsaiedadel.net"
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 32390
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 0

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

;; ANSWER SECTION:
elsaiedadel.net.      86400   IN      SOA     elsaiedadel.net. server.elsaiedadel.net. 2026010200 86400 3600 604800 108
00
elsaiedadel.net.      86400   IN      NS      elsaiedadel.net.
elsaiedadel.net.      86400   IN      A       192.168.1.1

Received 106 bytes from 127.0.0.1#53 in 1 ms
[root@server.elsaiedadel.net rz]# host -t A elsaiedadel.net
elsaiedadel.net has address 192.168.1.1
[root@server.elsaiedadel.net rz]# host -t PTR 192.168.1.1
1.1.168.192.in-addr.arpa domain name pointer server.elsaiedadel.net.
1.1.168.192.in-addr.arpa domain name pointer ns.elsaiedadel.net.
[root@server.elsaiedadel.net rz]#
```

Рис. 16: Проверка host

Подготовка provisioning

Создана структура каталогов для хранения DNS-конфигурации в /vagrant/provision/server/dns и скопированы необходимые файлы.

```
[root@server.elsaiedadel.net rz]#  
[root@server.elsaiedadel.net rz]# cd /vagrant/  
[root@server.elsaiedadel.net vagrant]# mkdir -p /vagrant/provision/server/dns/etc/named  
[root@server.elsaiedadel.net vagrant]# mkdir -p /vagrant/provision/server/dns/var/named/master  
[root@server.elsaiedadel.net vagrant]# cp -R /etc/named.conf /vagrant/provision/server/dns/etc/  
[root@server.elsaiedadel.net vagrant]# cp -R /etc/named /vagrant/provision/server/dns/etc/  
named/          named.rfc1912.zones  named.root.key  
[root@server.elsaiedadel.net vagrant]# cp -R /etc/named/elsaiedadel.net /vagrant/provision/server/dns/etc/named/  
[root@server.elsaiedadel.net vagrant]# cp -R /var/named/master/* /vagrant/provision/server/dns/var/named/master/  
[root@server.elsaiedadel.net vagrant]# cd provision/server/  
[root@server.elsaiedadel.net server]# touch dns.sh  
[root@server.elsaiedadel.net server]# chmod +x dns.sh  
[root@server.elsaiedadel.net server]# █
```

Рис. 17: Подготовка каталогов

Скрипт dns.sh

Создан provisioning-скрипт dns.sh, автоматизирующий установку, настройку и запуск DNS-сервера при старте виртуальной машины.

```
1 #!/bin/bash
2 echo "Provisioning script $0"
3 echo "Install needed packages"
4 dnf -y install bind bind-utils
5 echo "Copy configuration files"
6 cp -R /vagrant/provision/server/dns/etc/* /etc
7 cp -R /vagrant/provision/server/dns/var/named/* /var/named
8 chown -R named:named /etc/named
9 chown -R named:named /var/named
10 restorecon -vR /etc
11 restorecon -vR /var/named
12 echo "Configure firewall"
13 firewall-cmd --add-service=dns
14 firewall-cmd --add-service=dns --permanent
15 echo "Tuning SELinux"
16 setsebool named_write_master_zones 1
17 setsebool -P named_write_master_zones 1
18 echo "Change dns server address"
19 nmcli connection edit "eth0" <<EOF
20 remove ipv4.dns
21 set ipv4.ignore-auto-dns yes
22 set ipv4.dns 127.0.0.1
23 save
24 quit
25 EOF
26 systemctl restart NetworkManager
27 echo "Start named service"
28 /etc/init.d/named start
```

Выводы

Вывод

В ходе лабораторной работы был установлен и настроен DNS-сервер на базе BIND. Реализована работа кэширующего и первичного DNS-сервера, настроены прямая и обратная зоны, проверена корректность разрешения имён и автоматизирован процесс развёртывания. Полученные результаты подтверждают корректную работу DNS-сервера и его готовность к использованию во внутренней виртуальной сети.