

Лабораторная №2

Администрирование сетевых подсистем

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Цель

- Приобретение навыков по установке и конфигурированию DNS-сервера
- Усвоение принципов работы системы доменных имён на ОС Rocky Linux

Ход работы

Для начала загружаем операционную систему,
переходим в каталог Vagrant

```
PS C:\work\edzhibitskaya\vagrant> vagrant up server
Bringing machine 'server' up with 'virtualbox' provider...
==> server: You assigned a static IP ending in ".1" or ":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 wo
rk
==> server: properly, try changing this IP.
==> server: You assigned a static IP ending in ".1" or ":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 wo
rk
==> server: properly, try changing this IP.
==> server: Clearing any previously set forwarded ports...
==> server: Clearing any previously set network interfaces
```

Рис. 1: Загрузка ОС

```
root@server:~ - sudo -i
[edzhibitskaya@server.edzhibitskaya.net ~]$ sudo -i
[sudo] password for edzhibitskaya:
[root@server.edzhibitskaya.net ~]# dnf -y install bind bind-utils
Extra Packages for Enterprise Linux 27 kB/s | 40 kB 00:01
Extra Packages 0% [          ] 42 kB/s | 24 kB 01:14 ETA
```

Рис. 2: bind, bind-utils

```
[root@server.edzhibitskaya.net ~]# dig www.yandex.ru
;; communications error to 192.168.1.1#53: connection refused
;; communications error to 192.168.1.1#53: connection refused
;; communications error to 192.168.1.1#53: connection refused

;<<>> DiG 9.18.33 <<>> www.yandex.ru
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 21954
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 0

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

;; ANSWER SECTION:
www.yandex.ru.                564     IN      A      77.88.44.55
www.yandex.ru.                564     IN      A      77.88.55.88
www.yandex.ru.                564     IN      A      5.255.255.77

;; Query time: 51 msec
;; SERVER: fd17:625c:f037:2::3#53(fd17:625c:f037:2::3) (UDP)
;; WHEN: Mon Sep 08 19:03:24 UTC 2025
;; MSG SIZE rcvd: 90

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

Рис. 3: Запрос к DNS-адресу Яндекса

В файле `/etc/resolv.conf` указано к каким DNS-серверам обращаться для преобразования доменных имен в IP-адреса и наоборот

```
[root@server.edzhbitskaya.net ~]# cat /etc/resolv.conf
# Generated by NetworkManager
search IGD_MGTS edzhbitskaya.net
nameserver 192.168.1.1
nameserver fd17:625c:f037:2::3
[root@server.edzhbitskaya.net ~]#
```

Рис. 4: Файл `/etc/resolv.conf`

Просмотр содержимого файлов

```
[root@server.edzhibitskaya.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";
    //
}
```

/etc/named.conf - главный конфигурационный файл демона BIND (named). Он определяет общие параметры работы DNS-сервера, зоны, которые он обслуживает, и политики доступа

Рис. 5: Файл /etc/named.conf

`/var/named/named.localhost` - это файл прямой зоны для домена `localhost`. Он сопоставляет имя `localhost` с IP-адресом `127.0.0.1`

`/var/named/named.loopback` - это файл обратной зоны, выполняет обратное преобразование

```
[root@server.edzhibitskaya.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.edzhibitskaya.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.

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

Рис. 6: Файлы `named.localhost` и `named.loopback`

```
[root@server.edzhibitskaya.net ~]# systemctl start named
[root@server.edzhibitskaya.net ~]# systemctl enabled named
Unknown command verb 'enabled', did you mean 'enable'?
[root@server.edzhibitskaya.net ~]# systemctl enable named
Created symlink '/etc/systemd/system/multi-user.target.wants/named.service' → '/usr/lib/systemd/system/named.service'.
[root@server.edzhibitskaya.net ~]#
```

Рис. 7: Запуск сервера

Проанализируем вывод команд dig
www.yandex.ru и dig (127.0.0.1?) www.yandex.ru.
Вторая команда дает больший вывод, так как
в ней мы еще указываем к какому серверу
обращаться, она помогает в отладке и
диагностике конфигурации

```
[root@server.edzhibitskaya.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: NOERROR, id: 8319
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 48c3573e2e56ef880100000068bf2aa2903cc64b0e717cd1 (good)
;; QUESTION SECTION:
;www.yandex.ru.                IN      A

;; ANSWER SECTION:
www.yandex.ru.                600     IN      A      77.88.44.55
www.yandex.ru.                600     IN      A      77.88.55.88
www.yandex.ru.                600     IN      A      5.255.255.77

;; Query time: 359 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Mon Sep 08 19:12:34 UTC 2025
;; MSG SIZE rcvd: 118

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

Рис. 8: Dig www.yandex.ru

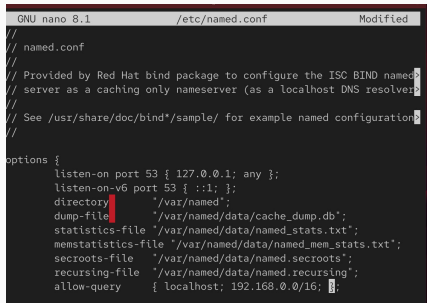
Далее сделаем DNS-сервер сервером по умолчанию для хоста server и внутренней виртуальной сети

```
root@server.edzhibitskaya.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-lx, dcb, sriov, ethtool, match, ipv4, ipv6, 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' (9e794e8b-188b-46e6-9bfc-fda8868e20ce) successfully updated.
nmcli> quit
root@server.edzhibitskaya.net ~]# systemctl restart NetworkManager
root@server.edzhibitskaya.net ~]# cat /etc/resolv.conf
# Generated by NetworkManager
search edzhibitskaya.net
nameserver 127.0.0.1
nameserver fd17:625c:f037:2::3
root@server.edzhibitskaya.net ~]#
```

Рис. 9: Настройка соединения



```
GNU nano 8.1 /etc/named.conf Modified
//
// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named>
// server as a caching only nameserver (as a localhost DNS resolver)>
//
// See /usr/share/doc/bind*/sample/ for example named configuration>
//
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. 10: Настройка направления запросов

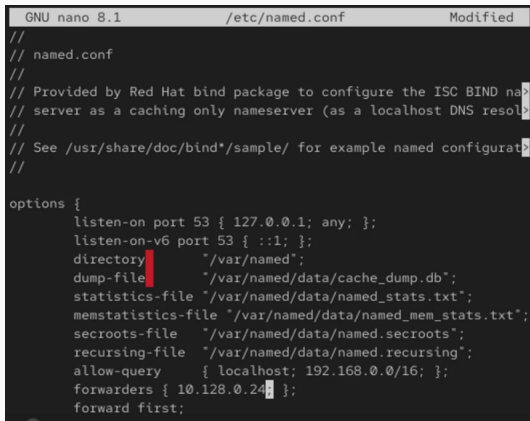
Также настраиваем направление DNS-запросов от всех узлов внутренней сети, включая запросы от узла server, через узел server. Для этого редактируем файл `/etc/named.conf`

Вносим изменения в настройки
межсетевого экрана узла server,
убеждаемся, что DNS-запросы идут
через узел server

```
[root@server.edzhbitskaya.net ~]#  
[root@server.edzhbitskaya.net ~]# firewall-cmd --add-service=dns  
success  
[root@server.edzhbitskaya.net ~]# firewall-cmd --add-service=dns --  
permanent  
success  
[root@server.edzhbitskaya.net ~]# lsof | grep UDP  
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/10  
02/gvfs  
Output information may be incomplete.  
lsof: WARNING: can't stat() fuse.portal file system /run/user/1002/d  
oc  
Output information may be incomplete.  
avahi-dae  872                avahi  12u    IPv4  
          9463                0t0    UDP *:mdns  
avahi-dae  872                avahi  13u    IPv6  
          9464                0t0    UDP *:mdns  
chronyd    920                chrony  5u     IPv4  
          8650                0t0    UDP localhost:323  
chronyd    920                chrony  6u     IPv6  
          8651                0t0    UDP localhost:323  
wsdd       13183               edzhbitskaya  7u     IPv4  
          50425                0t0    UDP 239.255.255.250:ws-discovery  
wsdd       13183               edzhbitskaya  8u     IPv4  
          50426                0t0    UDP *:32888  
wsdd       13183               edzhbitskaya  9u     IPv4  
          50427                0t0    UDP server.edzhbitskaya.net:ws-discov
```

Рис. 11: Firewall

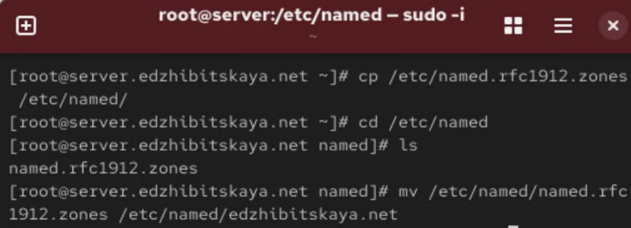
В ситуации, когда DNS-запросы от сервера фильтруются сетевым оборудованием, следует добавить перенаправление DNS-запросов на конкретный вышестоящий DNS-сервер



```
GNU nano 8.1 /etc/named.conf Modified
//
// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND name
// server as a caching only nameserver (as a localhost DNS resolver)
//
// 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 { 10.128.0.248; };
    forward first;
}
```

Рис. 12: Редактирование named.conf

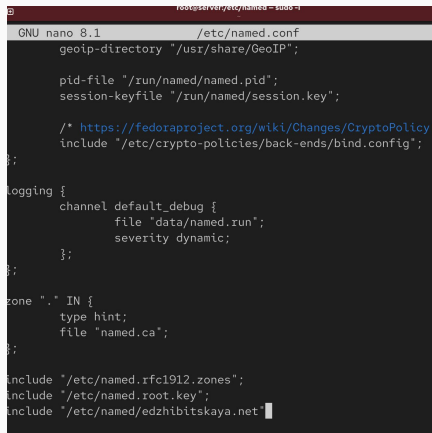
Далее копируем шаблон описания DNS-зон `named.rfc1912.zones` из каталога `/etc` в каталог `/etc/named` и переименовываем его

A terminal window with a dark background and a red title bar. The title bar contains a plus icon, the text 'root@server:/etc/named - sudo -i', a window icon, a menu icon, and a close icon. The terminal shows a series of commands and their outputs. The first command is 'cp /etc/named.rfc1912.zones /etc/named/' which is executed from the root prompt. The second command is 'cd /etc/named' which is executed from the root prompt. The third command is 'ls' which is executed from the named directory and shows 'named.rfc1912.zones'. The fourth command is 'mv /etc/named/named.rfc1912.zones /etc/named/edzhibitskaya.net' which is executed from the named directory.

```
root@server:/etc/named - sudo -i
[root@server.edzhibitskaya.net ~]# cp /etc/named.rfc1912.zones
/etc/named/
[root@server.edzhibitskaya.net ~]# cd /etc/named
[root@server.edzhibitskaya.net named]# ls
named.rfc1912.zones
[root@server.edzhibitskaya.net named]# mv /etc/named/named.rfc
1912.zones /etc/named/edzhibitskaya.net
```

Рис. 13: Перемещение файла

Редактирование файлов

A terminal window showing the nano text editor editing the file /etc/named.conf. The editor's title bar reads 'GNU nano 8.1 /etc/named.conf'. The content of the file includes configuration for the GeoIP directory, pid-file, session-keyfile, logging channel, and zone definitions. The cursor is at the end of the line 'include "/etc/named/edzhibitskaya.net";'.

```
GNU nano 8.1 /etc/named.conf
geoip-directory "/usr/share/GeoIP";

pid-file "/run/named/named.pid";
session-keyfile "/run/named/session.key";

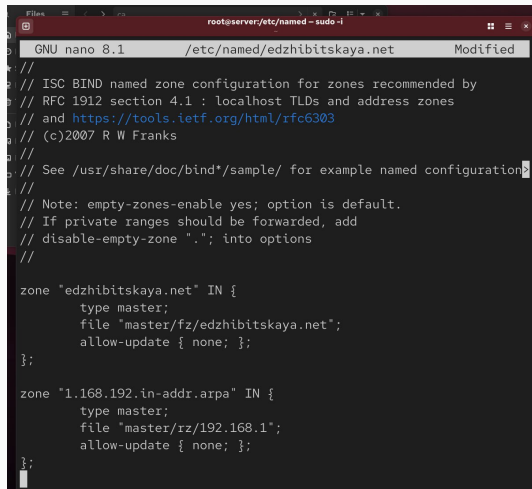
/* https://fedoraproject.org/wiki/Changes/CryptoPolicy
include "/etc/crypto-policies/back-ends/bind.config";
};

logging {
    channel default_debug {
        file "data/named.run";
        severity dynamic;
    };
};

zone "." IN {
    type hint;
    file "named.ca";
};

include "/etc/named.rfc1912.zones";
include "/etc/named.root.key";
include "/etc/named/edzhibitskaya.net";
```

Рис. 14: /etc/named.conf

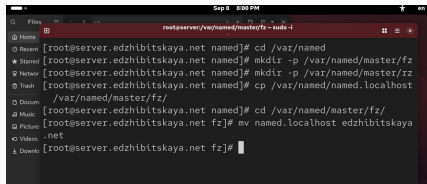
A terminal window showing the nano text editor editing the file /etc/named/edzhibitskaya.net. The editor's title bar reads 'GNU nano 8.1 /etc/named/edzhibitskaya.net Modified'. The content includes comments about ISC BIND and zone configurations for 'edzhibitskaya.net' and '1.168.192.in-addr.arpa'. The cursor is at the end of the file.

```
GNU nano 8.1 /etc/named/edzhibitskaya.net Modified
//
// 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
//
// Note: empty-zones-enable yes; option is default.
// If private ranges should be forwarded, add
// disable-empty-zone "."; into options
//

zone "edzhibitskaya.net" IN {
    type master;
    file "master/fz/edzhibitskaya.net";
    allow-update { none; };
};

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

Рис. 15: /etc/named/edzhibitskaya.net

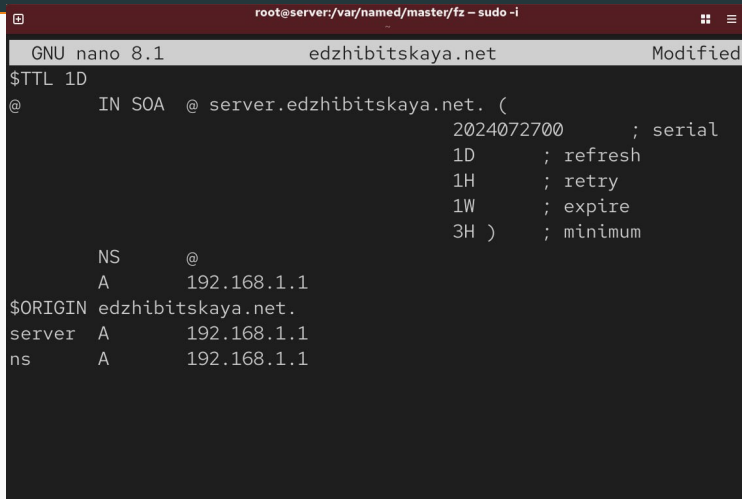


```
Sep 8 8:00 PM
root@server:/var/named/master/fz - sudo -i

[root@server.edzhbitskaya.net named]# cd /var/named
[root@server.edzhbitskaya.net named]# mkdir -p /var/named/master/fz
[root@server.edzhbitskaya.net named]# mkdir -p /var/named/master/rz
[root@server.edzhbitskaya.net named]# cp /var/named/named.localhost
/var/named/master/fz/
[root@server.edzhbitskaya.net named]# cd /var/named/master/fz/
[root@server.edzhbitskaya.net fz]# mv named.localhost edzhbitskaya
.net
[root@server.edzhbitskaya.net fz]#
```

Рис. 16: Создание подкаталогов

В каталоге `/var/named` создаем подкаталоги `master/fz` и `master/rz`, в которых будут располагаться файлы прямой и обратной зоны соответственно, скопируем шаблон прямой DNS-зоны `named.localhost` и переименуем его



```
root@server:/var/named/master/fz - sudo -i
GNU nano 8.1                                edzhibitskaya.net                                Modified
$TTL 1D
@          IN SOA  @ server.edzhibitskaya.net. (
                                                2024072700      ; serial
                                                1D           ; refresh
                                                1H           ; retry
                                                1W           ; expire
                                                3H )         ; minimum
        NS      @
        A       192.168.1.1
$ORIGIN edzhibitskaya.net.
server A       192.168.1.1
ns      A       192.168.1.1
```

Рис. 17: edzhibitskaya.net

Работа с файлом обратной DNS-зоны

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

Рис. 18: Копирование файла

```
root@server:/var/named/master/rz - sudo -i  
GNU nano 8.1 /var/named/master/rz/192.168.1 Modified  
$TTL 1D  
@ IN SOA @ server.edzhibitskaya.net. (  
2024072700 ; serial  
1D ; refresh  
1H ; retry  
1W ; expire  
3H ) ; minimum  
NS @  
A 192.168.1.1  
PTR server.edzhibitskaya.net.  
$ORIGIN 1.168.192.in-addr.arpa.  
1 PTR server.edzhibitskaya.net.  
1 PTR ns.edzhibitskaya.net.S
```

Рис. 19: 192.168.1

Исправляем права доступа к файлам в каталогах `/etc/named` и `/var/named`, чтобы демон `named` мог с ними работать и после изменения доступа к конфигурационным файлам `named` корректно восстанавливаем их метки в SELinux

```
[root@server.edzhibitskaya.net rz]# chown -R named:named /etc/named
[root@server.edzhibitskaya.net rz]# chown -R named:named /var/named
[root@server.edzhibitskaya.net rz]# restorecon -vR /etc
Relabeled /etc/lvm/devices/system.devices from system_u:object_r:lvm_metadata_t:s0 to system_u:object_r:lvm_etc_t:s0
Relabeled /etc/lvm/devices/backup/system.devices-20250906.183832.0005 from system_u:object_r:lvm_metadata_t:s0 to system_u:object_r:lvm_etc_t:s0
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
[root@server.edzhibitskaya.net rz]# restorecon -vR /var/named
[root@server.edzhibitskaya.net rz]#
```

Рис. 20: Права и метки

Переключатели и перезапуск DNS-сервера

```
[root@server.edzhibitskaya.net rz]# getsebool -a | grep named
named_tcp_bind_http_port --> off
named_write_master_zones --> on
[root@server.edzhibitskaya.net rz]# setsebool named_write_master_zones 1
[root@server.edzhibitskaya.net rz]# setsebool -P named_write_master_zones 1
[root@server.edzhibitskaya.net rz]#
```

Рис. 21: Переключатели

```
[root@server.edzhibitskaya.net rz]# systemctl restart named
[root@server.edzhibitskaya.net rz]# systemctl status named.service
● named.service - Berkeley Internet Name Domain (DNS)
   Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2025-09-11 08:15:03 UTC; 1min 10s ago
 Invocation: 687cd3dba8c04d678ae2f7a22c24d10c
   Process: 23503 ExecStartPre=/bin/bash -c if [ ! "$DISABLED" ]; then systemctl restart named; fi
   Process: 23506 ExecStart=/usr/sbin/named -u named -c ${NAMED_CONF}
  Main PID: 23507 (named)
    Tasks: 6 (limit: 10373)
   Memory: 9.6M (peak: 9.8M)
      CPU: 526ms
   CGroup: /system.slice/named.service
           └─23507 /usr/sbin/named -u named -c /etc/named.conf

Sep 11 08:15:14 server.edzhibitskaya.net named[23507]: timed out
Sep 11 08:15:14 server.edzhibitskaya.net named[23507]: timed out
```

Рис. 22: Перезапуск

Анализ работы DNS-сервера

```
; <<>> DiG 9.18.33 <<>> ns.edzhibitskaya.net
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NXDOMAIN, id: 36598
;; flags: qr rd ra ad; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDI
TIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:: udp: 1232
;; COOKIE: 0afb7c6c94e8055b0100000068c285686cfc7770a9c4720c (go
od)
;; QUESTION SECTION:
;ns.edzhibitskaya.net.      IN      A

;; AUTHORITY SECTION:
.                10800   IN      SOA      a.root-servers
.net. nstld.verisign-grs.com. 2025091100 1800 900 604800 86400

;; Query time: 1311 msec
;; SERVER: 127.0.0.1#53(127.0.0.1) (UDP)
;; WHEN: Thu Sep 11 08:16:40 UTC 2025
;; MSG SIZE rcvd: 152

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

Для анализа работы DNS-сервера воспользуемся утилитами dig и host

Рис. 23: Описание DNS-зоны с сервера

```
[root@server.edzhibitskaya.net rz]# host -l edzhibitskaya.net
edzhibitskaya.net name server edzhibitskaya.net.
edzhibitskaya.net has address 192.168.1.1
ns.edzhibitskaya.net has address 192.168.1.1
server.edzhibitskaya.net has address 192.168.1.1
[root@server.edzhibitskaya.net rz]# host -A edzhibitskaya.net
Trying "edzhibitskaya.net"
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 63946
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDI
TIONAL: 0

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

;; ANSWER SECTION:
edzhibitskaya.net.          86400   IN      SOA      edzhibitskaya.
net. server.edzhibitskaya.net. 2025091100 86400 3600 604800 10
800
edzhibitskaya.net.          86400   IN      NS       edzhibitskaya.
net.
```

Рис. 24: host -l; host -a

```
[root@server.edzhibitskaya.net rz]# host -t A edzhibitskaya.n
et
edzhibitskaya.net has address 192.168.1.1
[root@server.edzhibitskaya.net rz]# host -t PTR 192.168.1.1
1.1.168.192.in-addr.arpa domain name pointer ns.edzhibitskaya.
net.
1.1.168.192.in-addr.arpa domain name pointer server.edzhibitsk
aya.net.
[root@server.edzhibitskaya.net rz]#
```

Рис. 25: host -t

Наконец, в каталог для внесения изменений в настройки внутреннего окружения добавим необходимые директории, создадим исполняемый файл и пропишем скрипт.

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

Рис. 26: Добавление изменений

Сохранение изменений

```
GNU nano 8.1      dns.sh      Modifi
#!/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
```

Рис. 27: Скрипт

```
Vagrantfile
Файл  Изменить  Просмотр

server.ssh.insert_key = false
server.ssh.username = 'vagrant'
server.ssh.password = 'vagrant'

server.vm.network :private_network,
  ip: "192.168.1.1",
  virtualbox__intnet: true

server.vm.provider :virtualbox do |virtualbox|
  virtualbox.customize ["modifyvm", :id, "--vrde", "on"]
  virtualbox.customize ["modifyvm", :id, "--vrdeport", "3391"]
end

server.vm.provision "server dummy",
  type: "shell",
  preserve_order: true,
  path: "provision/server/01-dummy.sh"

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

Рис. 28: Vagrantfile

Выводы

- В ходе работы были получены навыки по установке и конфигурированию DNS-сервера и усвоены принципы работы системы доменных имён на ОС Rocky Linux