

# Презентация по лабораторной работе №2

## Настройка DNS-сервера

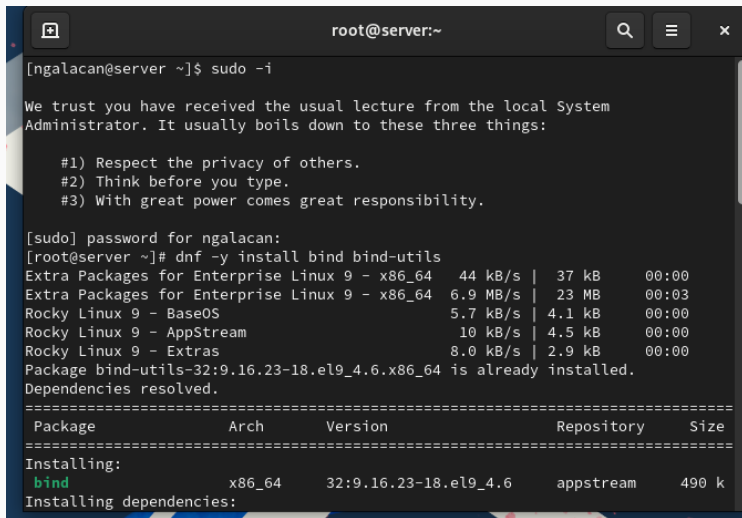
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Приобретение практических навыков по установке и конфигурированию DNSсервера, усвоение принципов работы системы доменных имён.

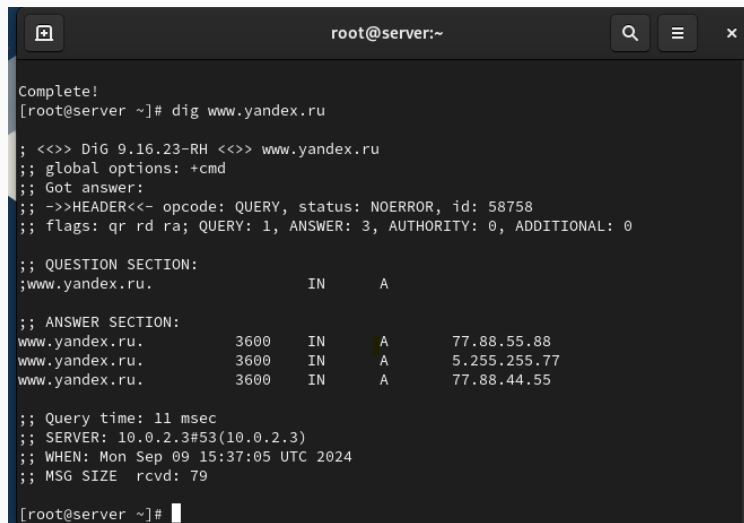


```
root@server:~  
[ngalacan@server ~]$ sudo -i  
  
We trust you have received the usual lecture from the local System  
Administrator. It usually boils down to these three things:  
  
#1) Respect the privacy of others.  
#2) Think before you type.  
#3) With great power comes great responsibility.  
  
[sudo] password for ngalacan:  
[root@server ~]# dnf -y install bind bind-utils  
Extra Packages for Enterprise Linux 9 - x86_64 44 kB/s | 37 kB 00:00  
Extra Packages for Enterprise Linux 9 - x86_64 6.9 MB/s | 23 MB 00:03  
Rocky Linux 9 - BaseOS 5.7 kB/s | 4.1 kB 00:00  
Rocky Linux 9 - AppStream 10 kB/s | 4.5 kB 00:00  
Rocky Linux 9 - Extras 8.0 kB/s | 2.9 kB 00:00  
Package bind-utils-32:9.16.23-18.el9_4.6.x86_64 is already installed.  
Dependencies resolved.  
=====
```

Package	Arch	Version	Repository	Size
Installing:				
bind	x86_64	32:9.16.23-18.el9_4.6	appstream	490 k

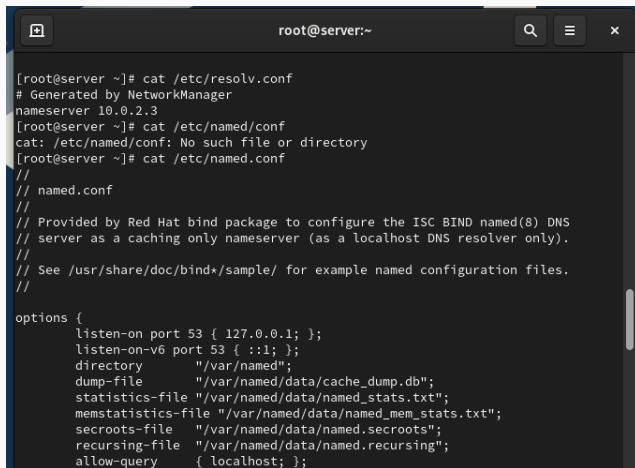
```
Installing dependencies:
```

Рис. 1: Установка bind, bind-utils



```
root@server:~  
Complete!  
[root@server ~]# dig www.yandex.ru  
  
; <<> DiG 9.16.23-RH <<> www.yandex.ru  
;; global options: +cmd  
;; Got answer:  
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 58758  
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, 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       5.255.255.77  
www.yandex.ru.      3600    IN      A       77.88.44.55  
  
;; Query time: 11 msec  
;; SERVER: 10.0.2.3#53(10.0.2.3)  
;; WHEN: Mon Sep 09 15:37:05 UTC 2024  
;; MSG SIZE rcvd: 79  
  
[root@server ~]#
```

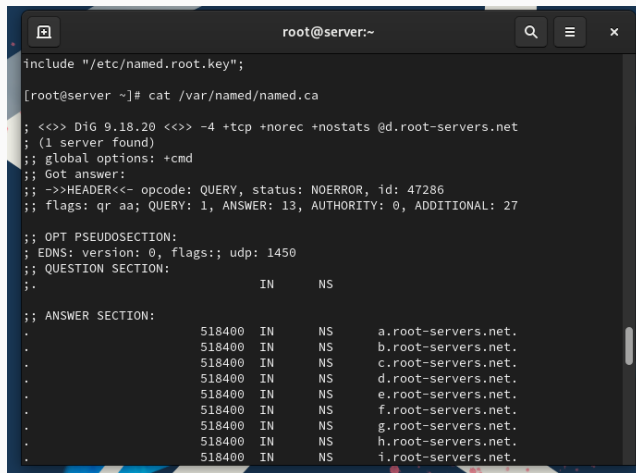
Рис. 2: Использование dig



A terminal window titled 'root@server:~' with search, menu, and close icons in the title bar. The terminal shows the following commands and output:

```
[root@server ~]# cat /etc/resolv.conf
# Generated by NetworkManager
nameserver 10.0.2.3
[root@server ~]# cat /etc/named/conf
cat: /etc/named/conf: No such file or directory
[root@server ~]# 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; };
```

Рис. 3: /etc/resolv.conf, /etc/named.conf

A terminal window titled 'root@server:~' with search, menu, and close icons. It displays the output of the command 'cat /var/named/named.ca'. The output is a BIND configuration file snippet showing a dig query for 9.18.20. The query returns a list of root servers (a.i through i.i) with their IP addresses (518400) and nameserver (NS) records.

```
include "/etc/named.root.key";

[root@server ~]# cat /var/named/named.ca

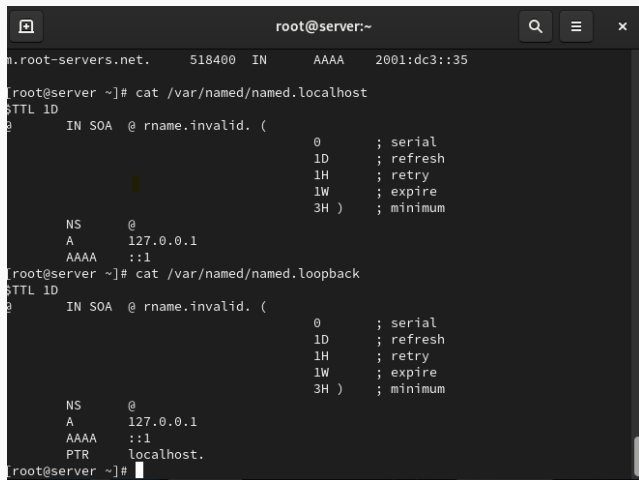
; <<> DiG 9.18.20 <<> -4 +tcp +nored +nostats @d.root-servers.net
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 47286
;; flags: qr aa; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 27

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1450
;; 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.
.      518400 IN      NS      i.root-servers.net.
```

Рис. 4: /var/named/named.ca

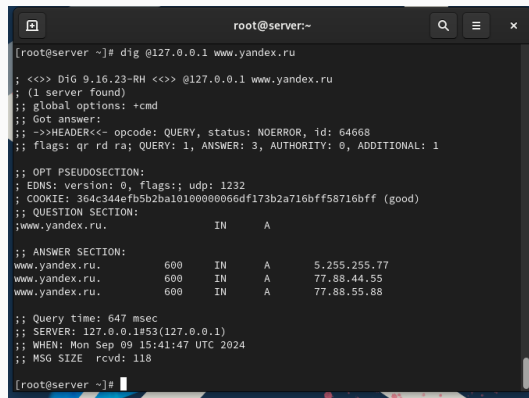
## Выполнение лабораторной работы



```
root@server:~  
n.root-servers.net.      518400  IN      AAAA    2001:dc3::35  
  
[root@server ~]# 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 ~]# 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 ~]#
```

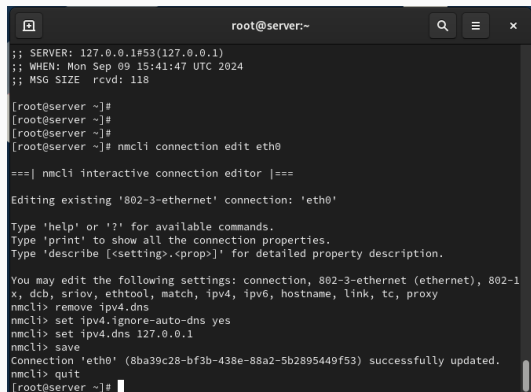
Рис. 5: /var/named/named.localhost, /var/named/named.loopback





```
root@server:~  
[root@server ~]# 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: 64668  
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 1232  
; COOKIE: 364c344efb5b2ba10100000066df173b2a716bff58716bff (good)  
;; QUESTION SECTION:  
;www.yandex.ru.                IN      A  
  
;; ANSWER SECTION:  
www.yandex.ru.                600     IN      A      5.255.255.77  
www.yandex.ru.                600     IN      A      77.88.44.55  
www.yandex.ru.                600     IN      A      77.88.55.88  
  
;; Query time: 647 msec  
;; SERVER: 127.0.0.1#53(127.0.0.1)  
;; WHEN: Mon Sep 09 15:41:47 UTC 2024  
;; MSG SIZE rcvd: 118  
  
[root@server ~]#
```

Рис. 6: Использование dig (2)



```
root@server:~  
;; SERVER: 127.0.0.1#53(127.0.0.1)  
;; WHEN: Mon Sep 09 15:41:47 UTC 2024  
;; MSG SIZE rcvd: 118  
  
[root@server ~]#  
[root@server ~]#  
[root@server ~]#  
[root@server ~]# 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), 802-1  
x, 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' (8ba39c28-bf3b-438e-88a2-5b2895449f53) successfully updated.  
nmcli> quit  
[root@server ~]#
```

Рис. 7: Изменение настроек сетевого соединения eth0

## Выполнение лабораторной работы

```
[root@server ~]# nmcli connection edit System\ eth0

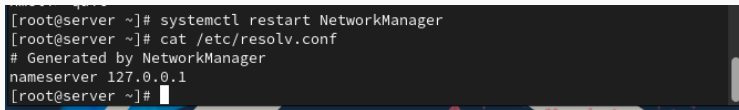
===| nmcli interactive connection editor |===

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.

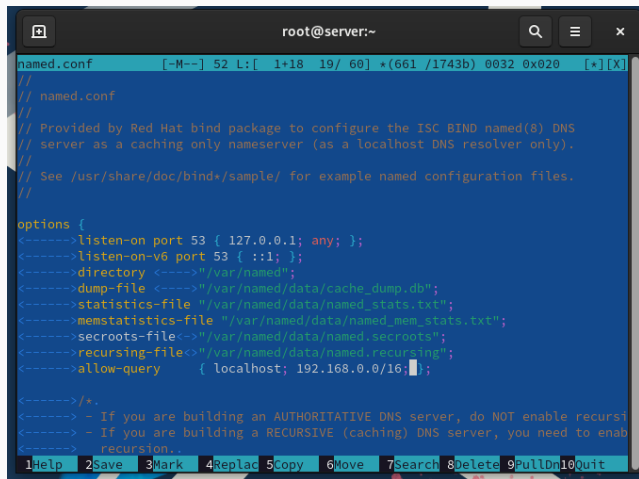
You may edit the following settings: connection, 802-3-ethernet (ethernet), 802-1
x, dcb, sriov, ethtool, match, ipv4, ipv6, hostname, link, tc, proxy
nmcli> remove ipv4.dns
nmcli> set ipv4.ignore-auto-dns yes
nmcli> set ipv4.dns 127.0.0.1
nmcli> save
Connection 'System eth0' (5fb06bd0-0bb0-7ffb-45f1-d6edd65f3e03) successfully upda
ted.
nmcli> quit
[root@server ~]#
```

Рис. 8: Изменение настроек сетевого соединения System eth0

A terminal window with a dark background and light-colored text. The text shows a sequence of commands and their output in a root shell on a server. The commands are: 'systemctl restart NetworkManager', 'cat /etc/resolv.conf', and a second 'cat /etc/resolv.conf'. The output of the first 'cat' command shows the content of the resolv.conf file, which is generated by NetworkManager and sets the nameserver to 127.0.0.1. The terminal window has a scrollbar on the right side.

```
[root@server ~]# systemctl restart NetworkManager
[root@server ~]# cat /etc/resolv.conf
# Generated by NetworkManager
nameserver 127.0.0.1
[root@server ~]#
```

Рис. 9: Перезапуск NetworkManager и просмотр файла



```
named.conf      [-M--] 52 L: [ 1+18 19/ 60] *(661 /1743b) 0032 0x020  [*] [X]
//
// 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.
//

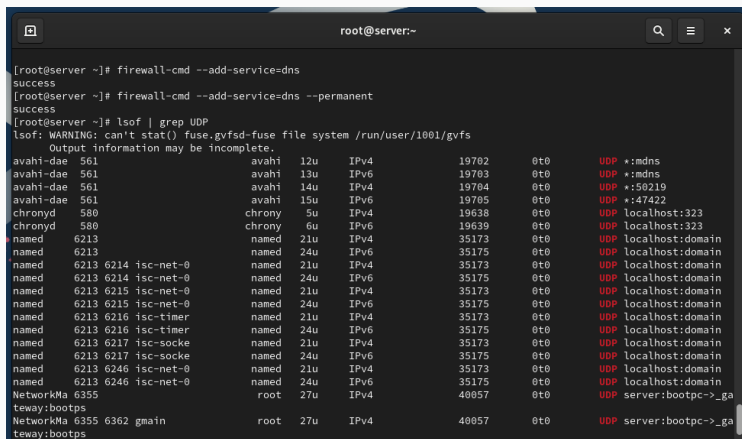
options {
<----->listen-on port 53 { 127.0.0.1; any; };
<----->listen-on-v6 port 53 { ::1; };
<----->directory <----->"/var/named";
<----->dump-file <----->"/var/named/data/cache_dump.db";
<----->statistics-file "/var/named/data/named_stats.txt";
<----->memstatistics-file "/var/named/data/named_mem_stats.txt";
<----->secroots-file<-->"/var/named/data/named.secrets";
<----->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 recursi
<-----> - If you are building a RECURSIVE (caching) DNS server, you need to enab
<-----> recursion..

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

Рис. 10: Внесение изменений в файл /etc/named.conf

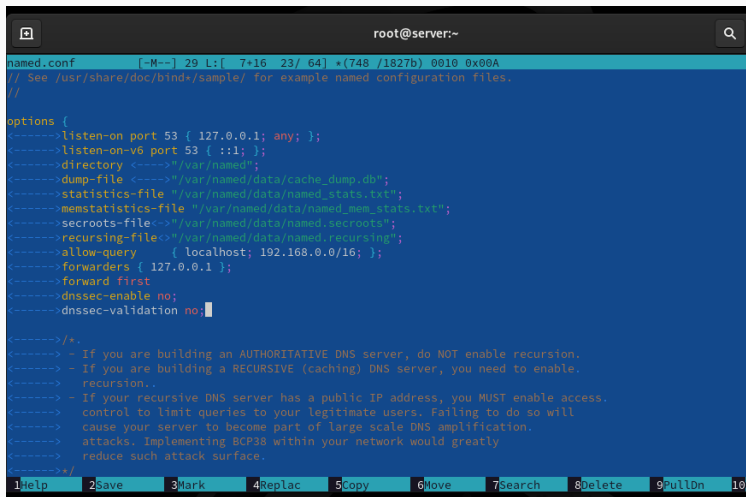
## Выполнение лабораторной работы



```
root@server:~  
[root@server ~]# firewall-cmd --add-service=dns  
success  
[root@server ~]# firewall-cmd --add-service=dns --permanent  
success  
[root@server ~]# lsof | grep UDP  
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1001/gvfs  
Output information may be incomplete.  
avahi-dae 561          avahi  12u    IPv4        19702      0t0      UDP *:mdns  
avahi-dae 561          avahi  13u    IPv6        19703      0t0      UDP *:mdns  
avahi-dae 561          avahi  14u    IPv4        19704      0t0      UDP *:50219  
avahi-dae 561          avahi  15u    IPv6        19705      0t0      UDP *:47422  
chronyd  580          chrony  5u     IPv4        19638      0t0      UDP localhost:323  
chronyd  580          chrony  6u     IPv6        19639      0t0      UDP localhost:323  
named    6213          named  21u    IPv4        35173      0t0      UDP localhost:domain  
named    6213          named  24u    IPv6        35175      0t0      UDP localhost:domain  
named    6213 6214 isc-net-0    named  21u    IPv4        35173      0t0      UDP localhost:domain  
named    6213 6214 isc-net-0    named  24u    IPv6        35175      0t0      UDP localhost:domain  
named    6213 6215 isc-net-0    named  21u    IPv4        35173      0t0      UDP localhost:domain  
named    6213 6215 isc-net-0    named  24u    IPv6        35175      0t0      UDP localhost:domain  
named    6213 6216 isc-timer  named  21u    IPv4        35173      0t0      UDP localhost:domain  
named    6213 6216 isc-timer  named  24u    IPv6        35175      0t0      UDP localhost:domain  
named    6213 6217 isc-socke  named  21u    IPv4        35173      0t0      UDP localhost:domain  
named    6213 6217 isc-socke  named  24u    IPv6        35175      0t0      UDP localhost:domain  
named    6213 6246 isc-net-0    named  21u    IPv4        35173      0t0      UDP localhost:domain  
named    6213 6246 isc-net-0    named  24u    IPv6        35175      0t0      UDP localhost:domain  
NetworkMa 6355          root   27u    IPv4        40057      0t0      UDP server:bootpc->_ga  
teway:bootps  
NetworkMa 6355 6362 gmain      root   27u    IPv4        40057      0t0      UDP server:bootpc->_ga  
teway:bootps
```

Рис. 11: Внесение изменений в настройки межсетевого экрана узла **server**, проверка

# Выполнение лабораторной работы



```
root@server:~
named.conf  [-M--] 29 L:[ 7+16 23/ 64] *(748 /1827b) 0010 0x00A
// 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.secrets";
<----->recursing-file<----->"/var/named/data/named.recursing";
<----->allow-query    { localhost; 192.168.0.0/16; };
<----->forwarders { 127.0.0.1 };
<----->forward first
<----->dnssec-enable no;
<----->dnssec-validation no;

<----->/*.
<-----> - 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.
<----->*/

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

Рис. 12: Редактирование named.conf

# Выполнение лабораторной работы



```
Open ▾  *ngalacan.net
/etc/named Save ≡ x

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 "ngalacan.net" IN {
18     type master;
19     file "master/fz/ngalacan.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 };
```

Рис. 13: Редактирование файла /etc/named/user.net



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

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

Рис. 14: Создание каталогов, копирование шаблона прямой зоны, переименование

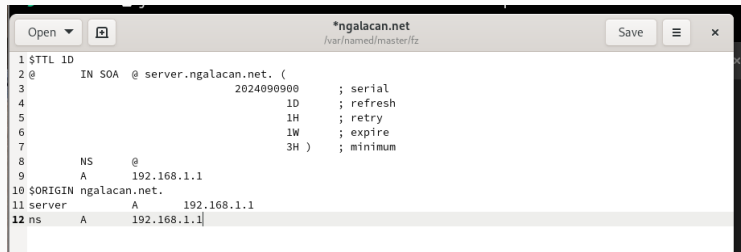
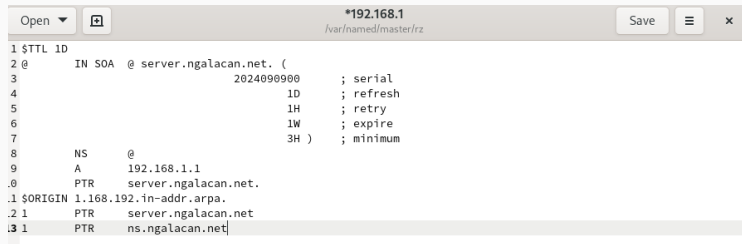


Рис. 15: Редактирование /var/named/master/fz/ngalacan.net

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

Рис. 16: Копирование шаблона обратной зоны, переименование



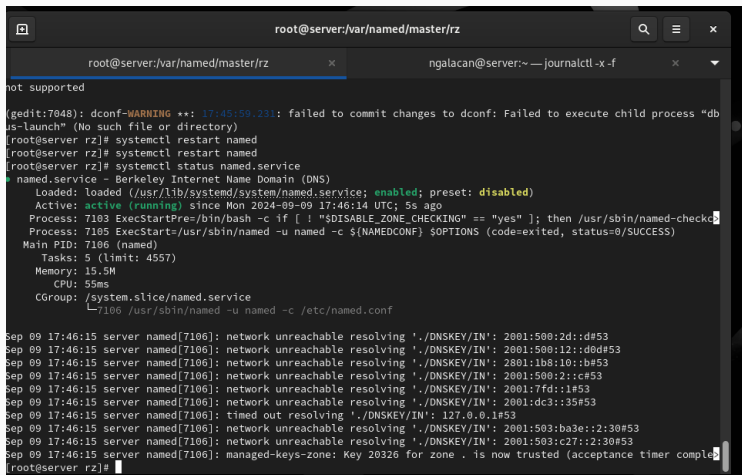
```
1 $TTL 1D
2 @      IN SOA  @ server.ngalacan.net. (
3          2024090900      ; serial
4          1D              ; refresh
5          1H              ; retry
6          1W              ; expire
7          3H )            ; minimum
8      NS      @
9      A       192.168.1.1
10     PTR     server.ngalacan.net.
11 $ORIGIN 1.168.192.in-addr.arpa.
12 1      PTR   server.ngalacan.net
13 1      PTR   ns.ngalacan.net|
```

Рис. 17: Редактирование `/var/named/master/rz/192.168.1`

```
[root@server rz]#  
[root@server rz]# chown -R named:named /etc/named  
[root@server rz]# chown -R named:named /var/named  
[root@server rz]# restorecon -vR /etc  
Relabeled /etc/sysconfig/network-scripts/ifcfg-eth1 from unconfined_u:object_r:user_tmp_t:s0  
to unconfined_u:object_r:net_conf_t:s0  
[root@server rz]# restorecon -vR /var/named  
[root@server rz]# getsebool -a | grep named  
named_tcp_bind_http_port --> off  
named_write_master_zones --> on  
[root@server rz]# setsebool named_write_master_zones 1  
[root@server rz]# setsebool -P named_write_master_zones 1  
[root@server rz]#
```

Рис. 18: Изменение прав доступа, восстановление меток SELinux, проверка

# Выполнение лабораторной работы

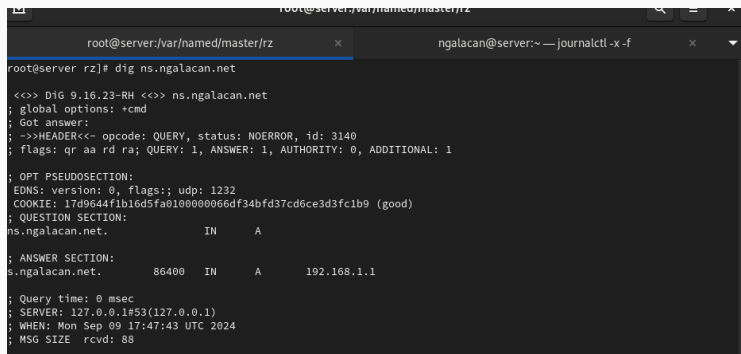


```
root@server:/var/named/master/rz
not supported

(gedit:7048): dconf-WARNING **: 17:45:59.231: failed to commit changes to dconf: Failed to execute child process “dbus-launch” (No such file or directory)
[root@server rz]# systemctl restart named
[root@server rz]# systemctl restart named
[root@server rz]# systemctl status named.service
● named.service - Berkeley Internet Name Domain (DNS)
   Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; preset: disabled)
   Active: active (running) since Mon 2024-09-09 17:46:14 UTC; 5s ago
     Process: 7103 ExecStartPre=/bin/bash -c if [ ! "$DISABLE_ZONE_CHECKING" == "yes" ]; then /usr/sbin/named-checkc
   Process: 7105 ExecStart=/usr/sbin/named -u named -c ${NAMEDCONF} $OPTIONS (code=exited, status=0/SUCCESS)
    Main PID: 7106 (named)
       Tasks: 5 (limit: 4557)
      Memory: 15.5M
         CPU: 55ms
    CGroup: /system.slice/named.service
            └─7106 /usr/sbin/named -u named -c /etc/named.conf

Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:500:2d::d#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:500:12::d0d#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2801:1b8:10::b#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:500:2::c#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:7fd:1#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:dc3:35#53
Sep 09 17:46:15 server named[7106]: timed out resolving './DNSKEY/IN': 127.0.0.1#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:503:ba3e::2:30#53
Sep 09 17:46:15 server named[7106]: network unreachable resolving './DNSKEY/IN': 2001:503:c27::2:30#53
Sep 09 17:46:15 server named[7106]: managed-keys-zone: Key 20326 for zone . is now trusted (acceptance timer comple
[root@server rz]#
```

Рис. 19: Запуск DNS-сервера после исправления ошибок



```
root@server:/var/named/master/rz
root@server:~ — journalctl -x -f
root@server rz]# dig ns.ngalacan.net

<<>> DiG 9.16.23-RH <<>> ns.ngalacan.net
; global options: +cmd
; Got answer:
; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 3140
; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

; OPT PSEUDOSECTION:
EDNS: version: 0, flags:; udp: 1232
COOKIE: 17d9644f1b16d5fa0100000066df34bfd37cd6ce3d3fc1b9 (good)
; QUESTION SECTION:
ns.ngalacan.net.                IN      A

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

; Query time: 0 msec
; SERVER: 127.0.0.1#53(127.0.0.1)
; WHEN: Mon Sep 09 17:47:43 UTC 2024
; MSG SIZE rcvd: 88
```

Рис. 20: Описание DNS-зоны с сервера ns.ngalacan.net

# Выполнение лабораторной работы

```
[root@server rz]# host -l ngalacan.net
ngalacan.net name server ngalacan.net.
ngalacan.net has address 192.168.1.1
ns.ngalacan.net has address 192.168.1.1
server.ngalacan.net has address 192.168.1.1
[root@server rz]# host -a ngalacan.net
Trying "ngalacan.net"
;; ->HEADER<<- opcode: QUERY, status: NOERROR, id: 46020
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

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

;; ANSWER SECTION:
ngalacan.net.                86400   IN      SOA     ngalacan.net. server.ngalacan.net. 2024090900 86400 3600 604800 10800
ngalacan.net.                86400   IN      NS      ngalacan.net.
ngalacan.net.                86400   IN      A       192.168.1.1

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

Received 119 bytes from 127.0.0.1#53 in 10 ms
[root@server rz]# host -t A ngalacan.net
ngalacan.net has address 192.168.1.1
[root@server rz]# host -t PTR 192.168.1.1
1.1.168.192.in-addr.arpa domain name pointer ns.ngalacan.net.1.168.192.in-addr.arpa.
1.1.168.192.in-addr.arpa domain name pointer server.ngalacan.net.1.168.192.in-addr.arpa.
[root@server rz]#
```

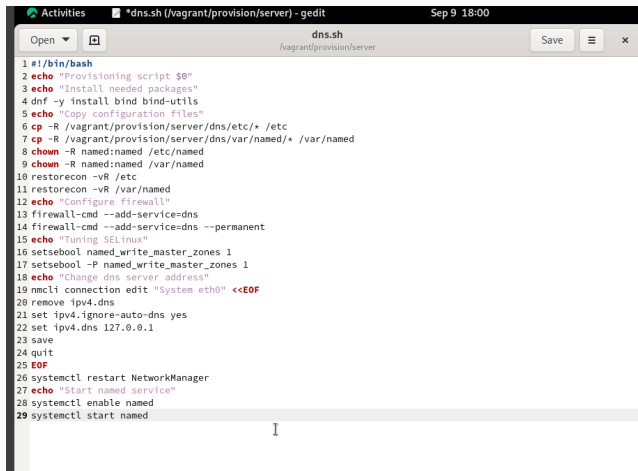
Рис. 21: Анализ корректности работы DNS-сервера



```
[root@server ~]# cd /vagrant
[root@server vagrant]# mkdir -p /vagrant/provision/server/dns/etc/named
[root@server vagrant]# mkdir -p /vagrant/provision/server/dns/var/named/master
[root@server vagrant]# cp -R /etc/named.conf /vagrant/provision/server/dns/etc/
[root@server vagrant]# cp -R /etc/named/* /vagrant/provision/server/dns/etc/named/
[root@server vagrant]# cp -R /var/named/master/* /vagrant/provision/server/dns/var/named/master
[root@server vagrant]# cd /vagrant/provision
[root@server provision]# cd /server
-bash: cd:/server: No such file or directory
[root@server provision]# cd /server
-bash: cd: /server: No such file or directory
[root@server provision]# cd server
[root@server server]# touch dns.sh
[root@server server]# chmod +x dns.sh
[root@server server]#
```

Рис. 22: Размещение конфигурационных файлов в каталог /vagrant/provision/server/dns

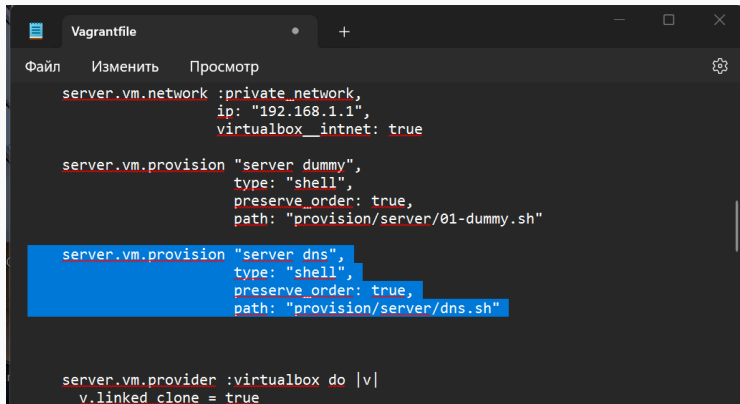
# Выполнение лабораторной работы



The screenshot shows a Gedit editor window titled "dns.sh (/vagrant/provision/server) - gedit". The window has a menu bar with "Open", "Save", and a close button. The script content is as follows:

```
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 "System 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 systemctl enable named
29 systemctl start named
```

Рис. 23: Редактирование скрипта dns.sh



The image shows a code editor window titled "Vagrantfile". The editor has a menu bar with "Файл", "Изменить", and "Просмотр", and a settings icon on the right. The code is written in a dark theme with syntax highlighting. It defines a virtual machine named "server" with a private network, two provision scripts, and a virtualbox provider.

```
server.vm.network :private_network,  
  ip: "192.168.1.1",  
  virtualbox____intnet: true  
  
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"  
  
server.vm.provider :virtualbox do |v|  
  v.linked_clone = true
```

Рис. 24: Редактирование Vagrantfile

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