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(ФГАОУ ВО «ЮФУ»)
Цифровая кафедра

ВЫПУСКНАЯ КВАЛИФИКАЦИОННАЯ РАБОТА
по дополнительной профессиональной программе
«Администрирование операционных систем семейства Linux»
на тему:

**«Информационная инфраструктура на базе корпоративного
сервера и рабочего места сотрудника в компании города Орёл»**

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Ростов-на-Дону - Таганрог 2023

Оглавление

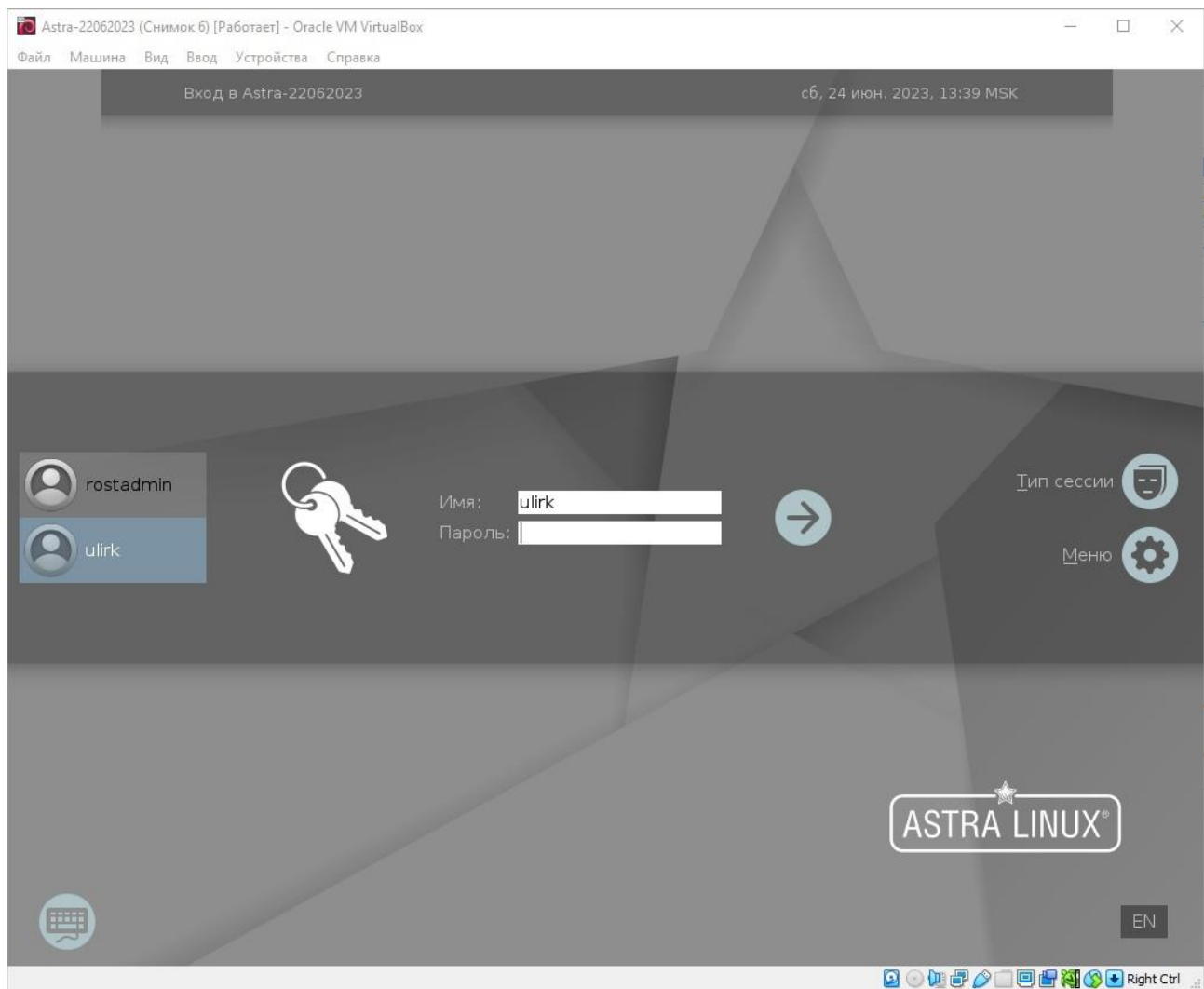
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Введение

В данной квалификационной работе, я выступаю в роли системного администратора в городе Орёл. Мне нужно подготовить рабочее место сотрудника и корпоративный сервер.

1 Основная часть

1.1 Подготовка рабочего места



создаём учетную запись пользователя 1

```
~: bash — Терминал Fly
Файл  Правка  Настройка  Справка
[Icons] [Search] [Dropdown: ls] [Checkmark]

rostadmin@Astra-22062023:~$ useradd Сугороб -p 123
bash: useradd: команда не найдена
rostadmin@Astra-22062023:~$ sudo useradd Сугороб -p 123
rostadmin@Astra-22062023:~$ sudo useradd Бобруков -p 1234
rostadmin@Astra-22062023:~$ sudo useradd Черепухин -p 12345
rostadmin@Astra-22062023:~$ sudo useradd Конкин -p 123456
rostadmin@Astra-22062023:~$ sudo useradd Алёхин -p 1234567
rostadmin@Astra-22062023:~$ sudo useradd Ветров -p 12345678
rostadmin@Astra-22062023:~$ groupadd office
bash: groupadd: команда не найдена
rostadmin@Astra-22062023:~$ sudo groupadd office
rostadmin@Astra-22062023:~$ sudo cat /etc/group | grep office
office:x:1009:
rostadmin@Astra-22062023:~$ sudo usermod -a -G office Сугороб
rostadmin@Astra-22062023:~$ sudo usermod -a -G office Бобруков
rostadmin@Astra-22062023:~$ sudo usermod -a -G office Черепухин
rostadmin@Astra-22062023:~$ sudo usermod -a -G office Конкин
rostadmin@Astra-22062023:~$ sudo usermod -a -G office Алёхин
rostadmin@Astra-22062023:~$ sudo usermod -a -G office Ветров
rostadmin@Astra-22062023:~$ sudo usermod -a -G office ulirk
rostadmin@Astra-22062023:~$ sudo cat /etc/group | grep office
office:x:1009:Сугороб,Бобруков,Черепухин,Конкин,Алёхин,Ветров,ulirk
rostadmin@Astra-22062023:~$
```

добавляем в группу других пользователей 2

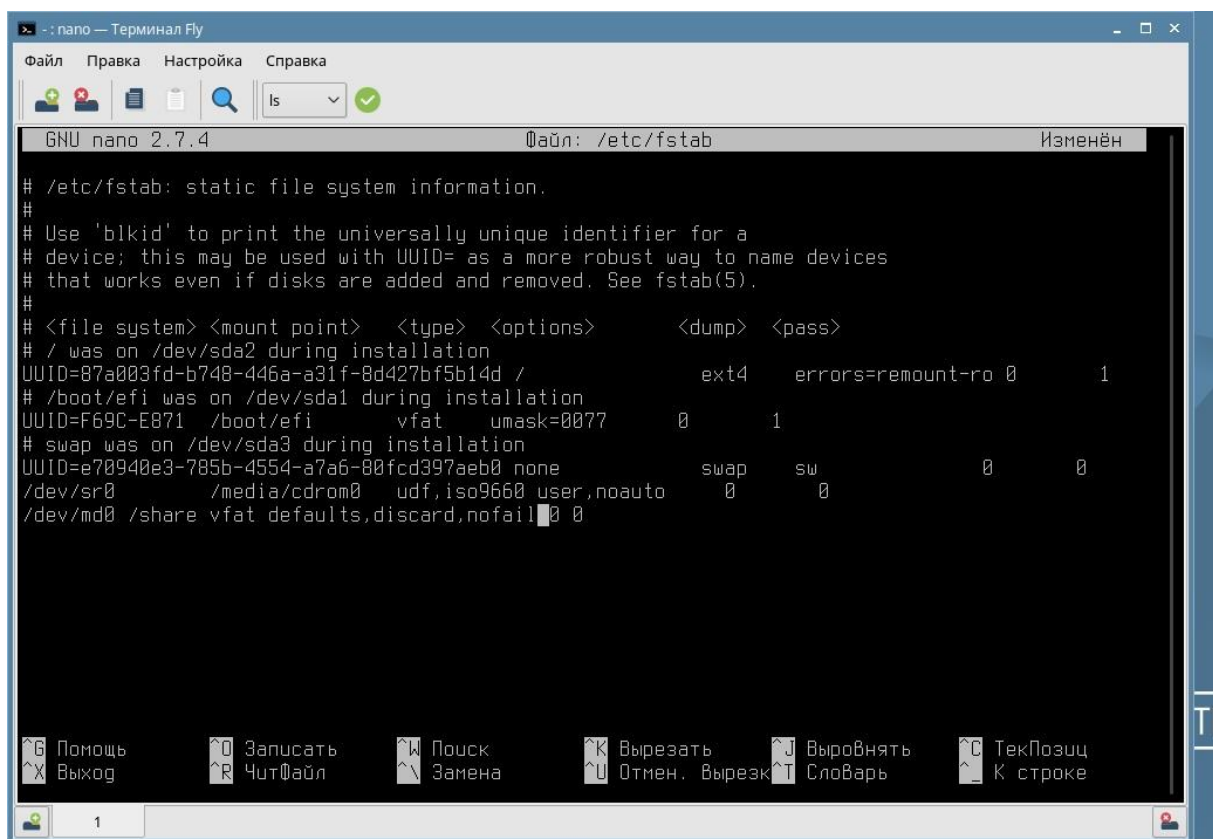
```
Astra-22062023 (Снимок 6) [Работает] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка

~: bash — Терминал Fly
Файл  Правка  Настройка  Справка
[Icons] [Search] [Dropdown: ls] [Checkmark]

Размер сектора (логический/физический): 512 байт / 512 байт
Размер I/O (минимальный/оптимальный): 512 байт / 512 байт

Диск /dev/md0: 396 MiB, 415236096 байт, 811008 секторов
Единицы: секторов по 1 * 512 = 512 байт
Размер сектора (логический/физический): 512 байт / 512 байт
Размер I/O (минимальный/оптимальный): 524288 байт / 2097152 байт
Тип метки диска: dos
Идентификатор диска: 0x00000000
root@Astra-22062023:~# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE  MOUNTPOINT
├─sda       8:0    0   24G  0 disk
├─┬─sda1    8:1    0   512M  0 part  /boot/efi
├─┬─sda2    8:2    0  21.5G  0 part  /
├─┬─sda3    8:3    0    2G   0 part  [SWAP]
├─sdb       8:16   0   100M  0 disk
├─┬─md0     9:0    0   396M  0 raid0 /share
├─sdc       8:32   0   100M  0 disk
├─┬─md0     9:0    0   396M  0 raid0 /share
├─sdd       8:48   0   100M  0 disk
├─┬─md0     9:0    0   396M  0 raid0 /share
├─sde       8:64   0   100M  0 disk
├─┬─md0     9:0    0   396M  0 raid0 /share
└─sr0      11:0    1 1024M  0 rom
root@Astra-22062023:~#
```

создание Raid 0 из 4-х дисков 3



The screenshot shows a terminal window titled "nano — Терминал Fly" with a menu bar (Файл, Правка, Настройка, Справка) and a toolbar. The main area displays the content of the `/etc/fstab` file. The file contains comments about using `blkid` and a table of filesystem entries. The bottom status bar shows the current line is 1.

```
GNU nano 2.7.4                               Файл: /etc/fstab                               Изменён

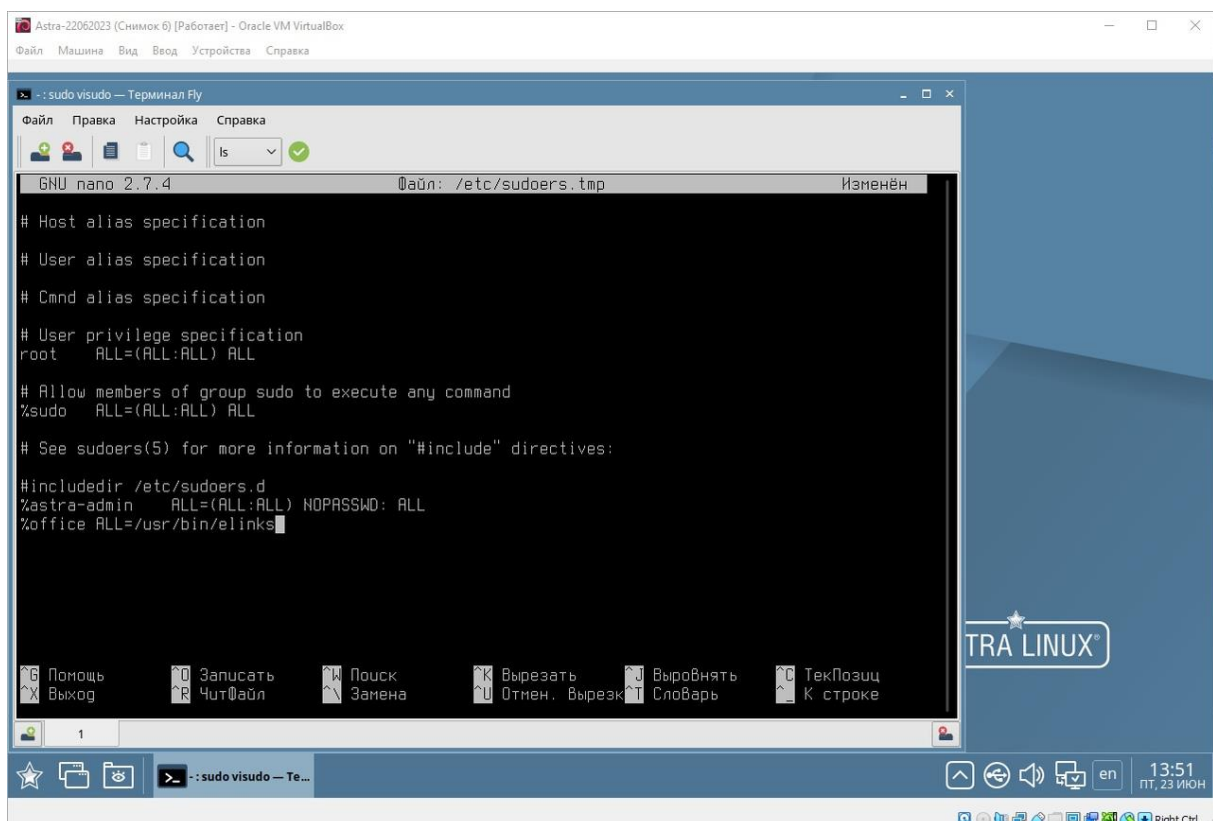
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point>   <type> <options>          <dump> <pass>
# / was on /dev/sda2 during installation
UUID=87a003fd-b748-446a-a31f-8d427bf5b14d /                ext4    errors=remount-ro 0      1
# /boot/efi was on /dev/sda1 during installation
UUID=F69C-E871 /boot/efi          vfat    umask=0077        0      1
# swap was on /dev/sda3 during installation
UUID=e70940e3-785b-4554-a7a6-80fcd397aeb0 none             swap    sw                0      0
/dev/sr0          /media/cdrom0    udf,iso9660 user,noauto      0      0
/dev/md0 /share vfat defaults,discard,nofail 0 0

^G Помощь      ^O Записать    ^W Поиск      ^K Вырезать    ^J Выводить    ^C ТекПозиц
^X Выход      ^R ЧтФайл     ^N Замена     ^U Отмен. Вырезк ^T Словарь     ^_ К строке

1
```

меняем fstab

Так как тип fat 32, задать квоты на диске нельзя.



The screenshot shows a terminal window titled "sudo visudo — Терминал Fly" with a menu bar and toolbar. The main area displays the content of the `/etc/sudoers.tmp` file. The file contains comments about host, user, and command alias specifications, user privilege specifications, and include directives. The bottom status bar shows the current line is 1.

```
GNU nano 2.7.4                               Файл: /etc/sudoers.tmp                               Изменён

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL:ALL) ALL

# Allow members of group sudo to execute any command
%sudo   ALL=(ALL:ALL) ALL

# See sudoers(5) for more information on "#include" directives:

#includedir /etc/sudoers.d
%astra-admin  ALL=(ALL:ALL) NOPASSWD: ALL
%office ALL=/usr/bin/elinks
```

даём права группе на elinks

```
htop -- Терминал Fly
Файл  Правка  Настройка  Справка
[Icons] [Search] [Dropdown: ls] [Checkmark]

1  [          0.0%] Tasks: 55, 64 thr; 1 running
2  [          0.0%] Load average: 0.40 0.13 0.03
Mem[|||||] 296M/1.92G Uptime: 02:09:36
Swp[      ] 0K/1.99G

PID USER      PRI  NI  VIRT   RES   SHR  S  CPU% MEM%   TIME+  Command
10350 rostadmin 20   0 559M 54232 45760 S  0.7  2.7 0:12.85 fly-term
11016 root        20   0 24532 3544  2932 R  0.7  0.2 0:00.08 htop
668 fly-dm      20   0 369M 69700 34628 S  0.0  3.5 0:43.77 /usr/lib/xorg/Xorg -br -novtswitc
742 fly-dm      20   0 369M 69700 34628 S  0.0  3.5 0:08.80 /usr/lib/xorg/Xorg -br -novtswitc
1057 rostadmin 20   0 486M 39256 31600 S  0.0  2.0 0:00.77 /usr/bin/fly-reflex-service
1 root        20   0 142M  8244  6136 S  0.0  0.4 0:03.04 /sbin/init
320 root        20   0 55064  4232  3684 S  0.0  0.2 0:00.93 /lib/systemd/systemd-journald
360 root        20   0 57932  5596  3880 S  0.0  0.3 0:00.60 /lib/systemd/systemd-udev
483 root        20   0 6948  2128  1932 S  0.0  0.1 0:00.00 /sbin/mdadm --monitor --scan
535 root        20   0 254M  3760  3032 S  0.0  0.2 0:00.11 /usr/sbin/rsyslogd -n -iNONE
536 root        20   0 254M  3760  3032 S  0.0  0.2 0:00.00 /usr/sbin/rsyslogd -n -iNONE
537 root        20   0 254M  3760  3032 S  0.0  0.2 0:00.09 /usr/sbin/rsyslogd -n -iNONE
533 root        20   0 254M  3760  3032 S  0.0  0.2 0:00.24 /usr/sbin/rsyslogd -n -iNONE
534 messagebu 20   0 43920  4312  3284 S  0.0  0.2 0:00.82 /usr/bin/dbus-daemon --system --a
538 root        20   0 45020  5160  4124 S  0.0  0.3 0:00.52 /lib/systemd/systemd-logind
539 root        20   0 29676  2832  2544 S  0.0  0.1 0:00.32 /usr/sbin/cron -f
540 root        20   0 4344  1216  1132 S  0.0  0.1 0:00.17 /usr/sbin/acpid
543 root        20   0 33788  5828  4808 S  0.0  0.3 0:00.05 /usr/sbin/ofonod -P ril --nodetac
547 avahi        20   0 45144  3184  2844 S  0.0  0.2 0:00.59 avahi-daemon: running [Astra-2206
593 root        20   0 443M 15484 13032 S  0.0  0.8 0:01.06 /usr/sbin/NetworkManager --no-dae
F1Help F2Setup F3Search F4Filter F5Tree F6SortBy F7Nice F8Nice F9Kill F10Quit
```

проверка в htop

1.2 Подготовка корпоративного сервиса

```
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for ulirk
Enter the new value, or press ENTER for the default
  Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
rostadmin@ubuntusrv-22062023:~$ compgen -u
root
daemon
bin
sys
sync
games
man
lp
mail
news
uucp
proxy
www-data
backup
list
irc
gnats
nobody
lapt
systemd-network
systemd-resolve
messagebus
systemd-timesync
pollinate
sshd
syslog
uuidd
tcpdump
tss
landscape
fwupd-refresh
usbmux
rostadmin
lxd
ulirk
rostadmin@ubuntusrv-22062023:~$
```

добавляем пользователя на сервере

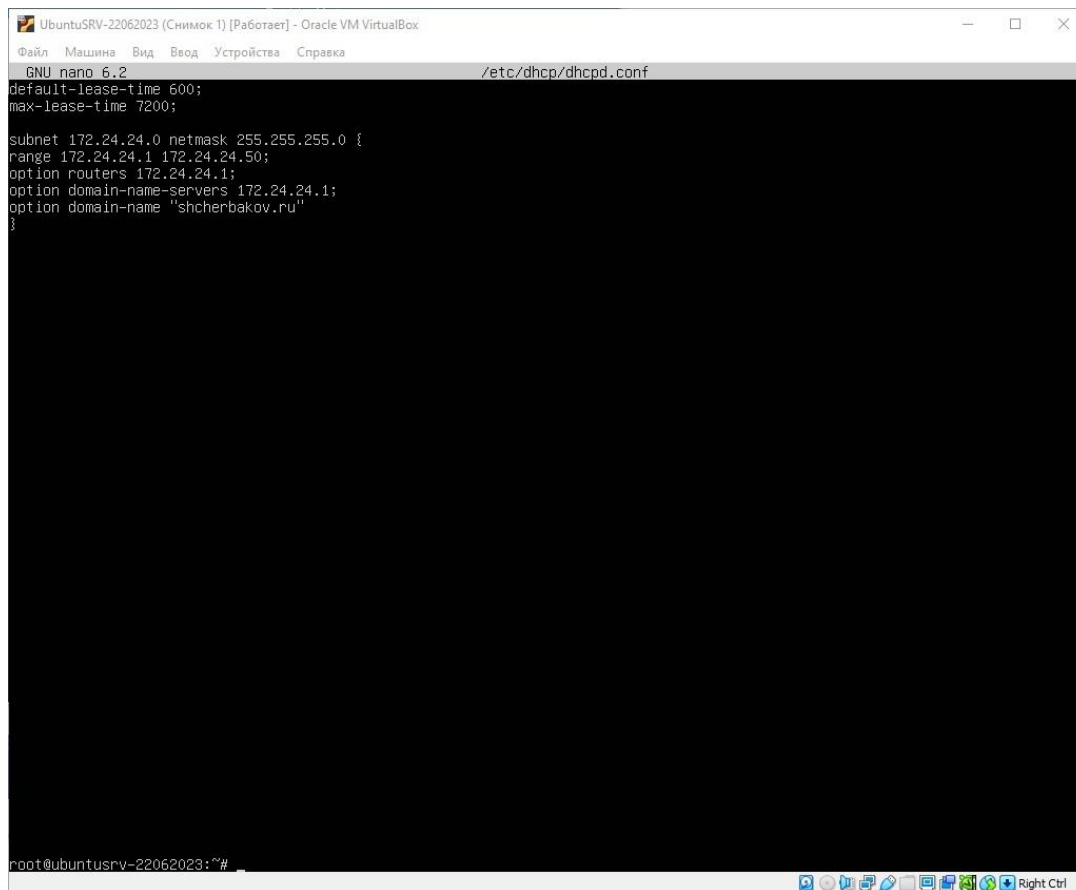
```
UbuntuSRV-22062023 (Снимок 1) [Работает] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка
64 bytes from 172.24.24.1: icmp_seq=11 ttl=64 time=0.048 ms
64 bytes from 172.24.24.1: icmp_seq=12 ttl=64 time=0.043 ms
--- 172.24.24.1 ping statistics ---
12 packets transmitted, 12 received, 0% packet loss, time 11287ms
rtt min/avg/max/mdev = 0.048/0.050/0.073/0.006 ms
root@ubuntu-srv-22062023:~# ifconfig
Command 'ifconfig' not found, but can be installed with:
apt install net-tools
root@ubuntu-srv-22062023:~# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:44:87:dd brd ff:ff:ff:ff:ff:ff
    inet 172.24.24.1/24 brd 172.24.24.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe44:87dd/64 scope link
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:79:b0:6f brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.68/24 metric 100 brd 192.168.1.255 scope global dynamic enp0s8
        valid_lft 86356sec preferred_lft 86356sec
    inet6 fe80::a00:27ff:fe79:b06f/64 scope link
        valid_lft forever preferred_lft forever
root@ubuntu-srv-22062023:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=111 time=45.5 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=111 time=36.7 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=111 time=40.7 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=111 time=40.5 ms
^C
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3164ms
rtt min/avg/max/mdev = 36.675/40.825/45.459/3.115 ms
root@ubuntu-srv-22062023:~# ping ya.ru
PING ya.ru (77.88.55.242) 56(84) bytes of data.
64 bytes from ya.ru (77.88.55.242): icmp_seq=1 ttl=56 time=27.6 ms
64 bytes from ya.ru (77.88.55.242): icmp_seq=2 ttl=56 time=31.9 ms
64 bytes from ya.ru (77.88.55.242): icmp_seq=3 ttl=56 time=29.8 ms
^C
--- ya.ru ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2046ms
rtt min/avg/max/mdev = 27.559/29.769/31.934/1.786 ms
root@ubuntu-srv-22062023:~#
```

проверка для статической настройки

Настроим DHCP сервер.

```
UbuntuSRV-22062023 (Снимок 1) [Работает] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка
GNU nano 6.2 /etc/netplan/00-installer-config.yaml
# This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      dhcp4: false
      addresses: [172.24.24.1/24]
      nameservers:
        addresses:
          - 8.8.8.8
    enp0s8:
      dhcp4: true
  version: 2
[ Read 12 lines ]
Help  Write Out  Where Is  Cut  Execute  Location  Undo  Set Mark
Exit  Read File  Replace  Paste  Justify  Go To Line  Redo  Copy
```

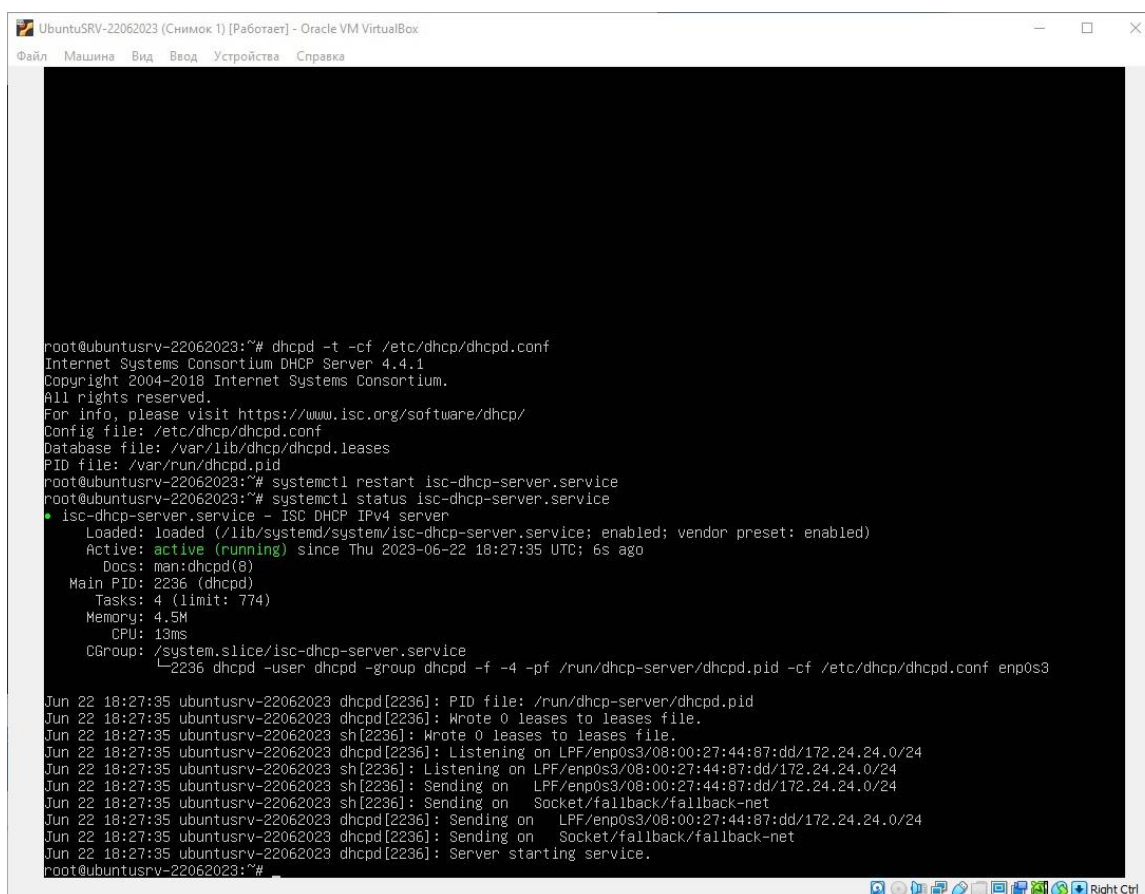
DHCP сервер 1



```
GNU nano 6.2 /etc/dhcp/dhcpd.conf
default-lease-time 600;
max-lease-time 7200;

subnet 172.24.24.0 netmask 255.255.255.0 {
  range 172.24.24.1 172.24.24.50;
  option routers 172.24.24.1;
  option domain-name-servers 172.24.24.1;
  option domain-name "shcherbakov.ru"
}
```

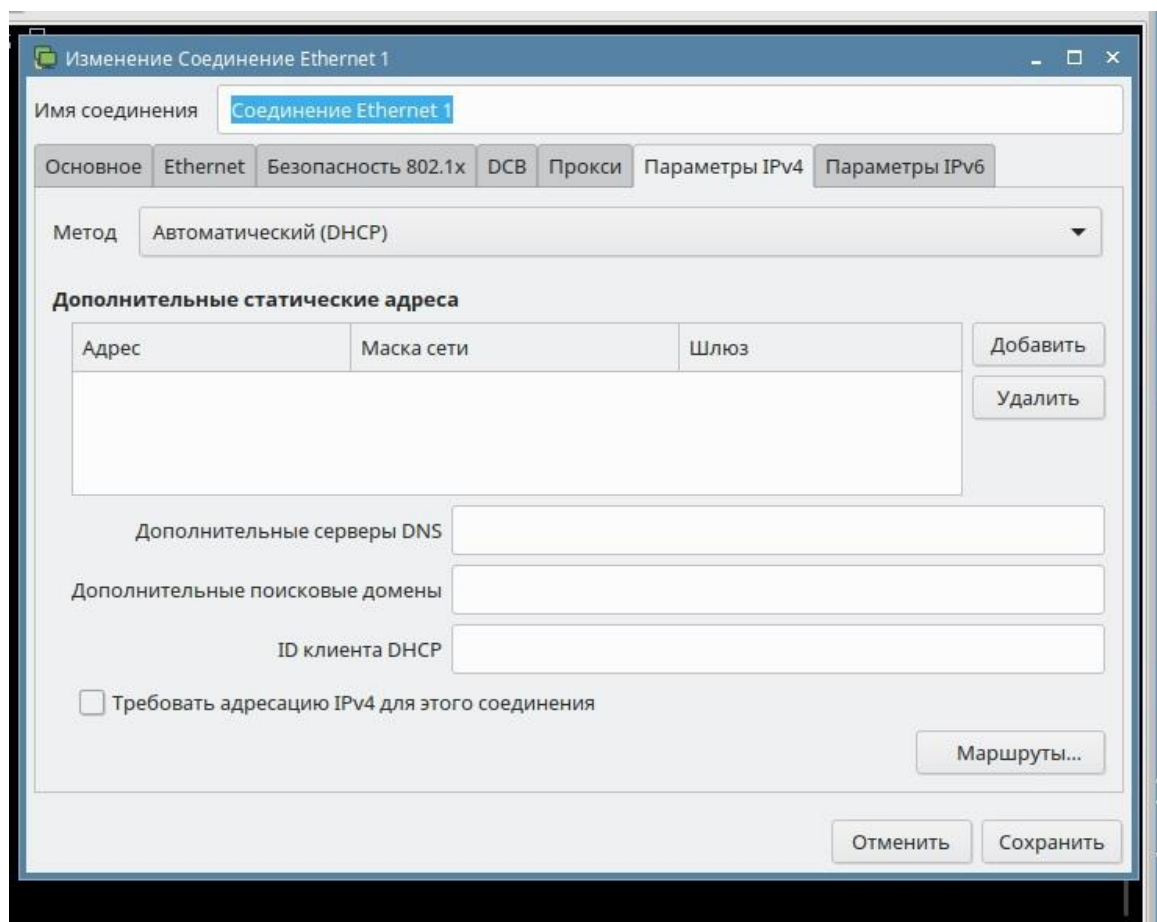
DHCP сервер 2



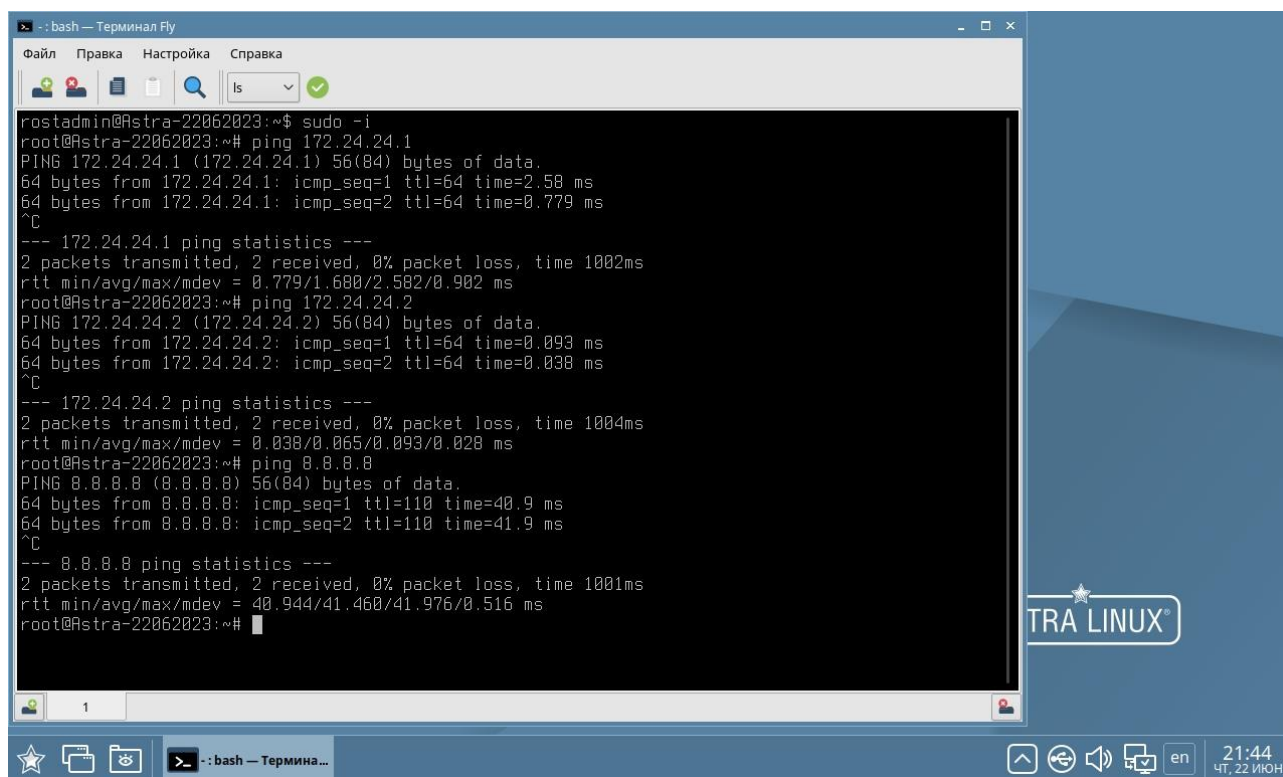
```
root@ubuntusrv-22062023:~# dhcpd -t -cf /etc/dhcp/dhcpd.conf
Internet Systems Consortium DHCP Server 4.4.1
Copyright 2004-2018 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/
Config file: /etc/dhcp/dhcpd.conf
Database file: /var/lib/dhcp/dhcpd.leases
PID file: /var/run/dhcpd.pid
root@ubuntusrv-22062023:~# systemctl restart isc-dhcp-server.service
root@ubuntusrv-22062023:~# systemctl status isc-dhcp-server.service
• isc-dhcp-server.service - ISC DHCP IPv4 server
   Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Thu 2023-06-22 18:27:35 UTC; 6s ago
     Docs: man:dhcpd(8)
    Main PID: 2236 (dhcpd)
       Tasks: 4 (limit: 774)
      Memory: 4.5M
         CPU: 13ms
    CGroup: /system.slice/isc-dhcp-server.service
            └─2236 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf enp0s3

Jun 22 18:27:35 ubuntusrv-22062023 dhcpd[2236]: PID file: /run/dhcp-server/dhcpd.pid
Jun 22 18:27:35 ubuntusrv-22062023 dhcpd[2236]: Wrote 0 leases to leases file.
Jun 22 18:27:35 ubuntusrv-22062023 sh[2236]: Wrote 0 leases to leases file.
Jun 22 18:27:35 ubuntusrv-22062023 dhcpd[2236]: Listening on LPF/enp0s3/08:00:27:44:87:dd/172.24.24.0/24
Jun 22 18:27:35 ubuntusrv-22062023 sh[2236]: Listening on LPF/enp0s3/08:00:27:44:87:dd/172.24.24.0/24
Jun 22 18:27:35 ubuntusrv-22062023 sh[2236]: Sending on LPF/enp0s3/08:00:27:44:87:dd/172.24.24.0/24
Jun 22 18:27:35 ubuntusrv-22062023 sh[2236]: Sending on Socket/fallback/fallback-net
Jun 22 18:27:35 ubuntusrv-22062023 dhcpd[2236]: Sending on LPF/enp0s3/08:00:27:44:87:dd/172.24.24.0/24
Jun 22 18:27:35 ubuntusrv-22062023 dhcpd[2236]: Sending on Socket/fallback/fallback-net
Jun 22 18:27:35 ubuntusrv-22062023 dhcpd[2236]: Server starting service.
root@ubuntusrv-22062023:~#
```

DHCP сервер 3

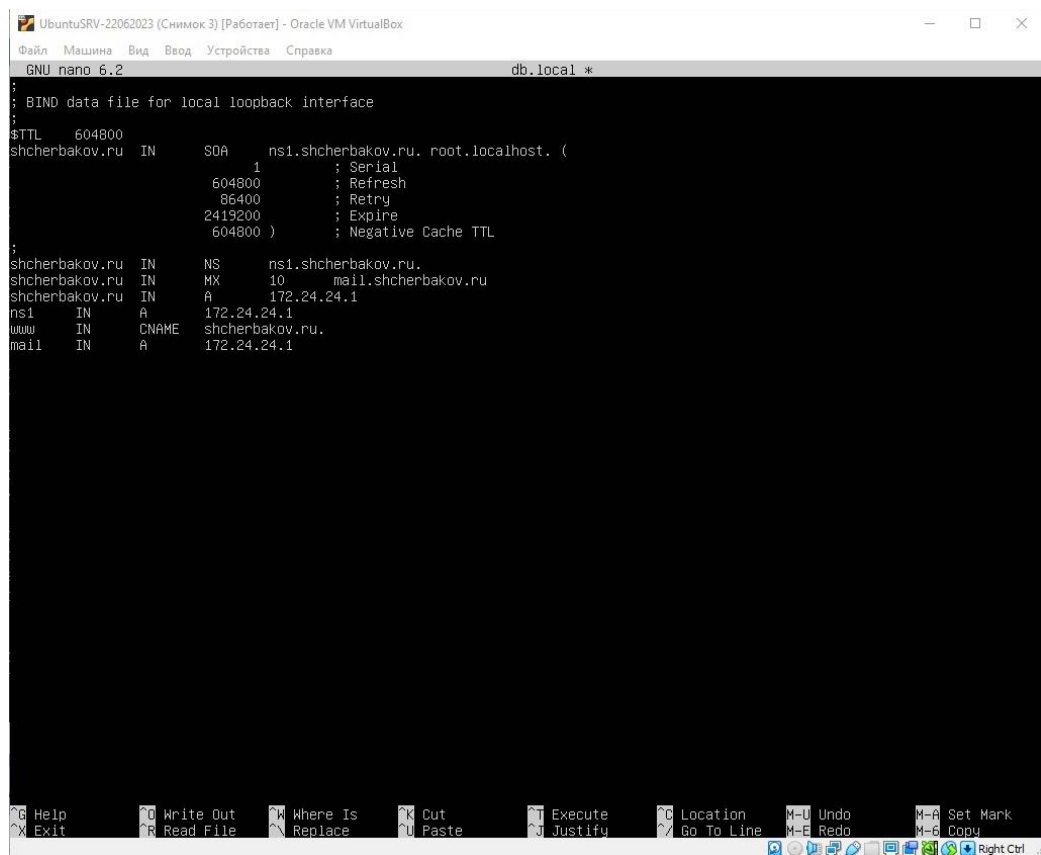


DHCP сервер 4



DHCP сервер 5

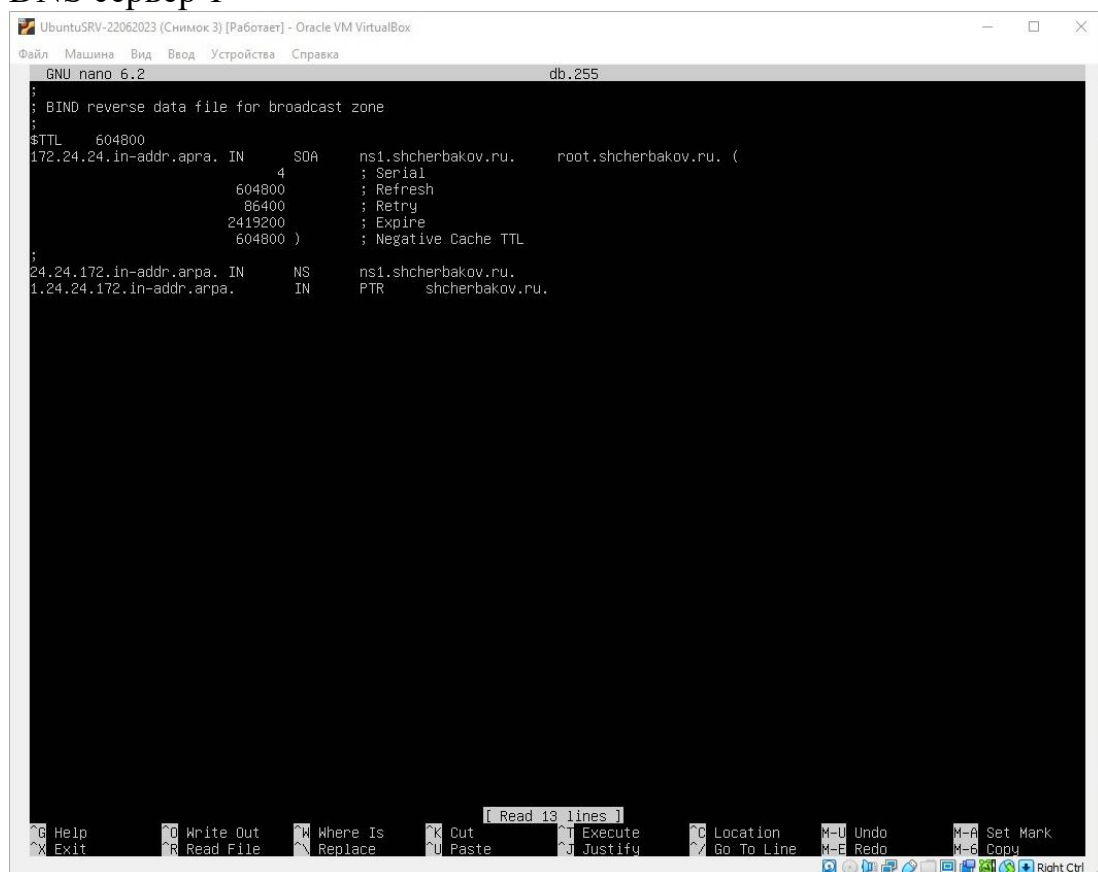
Поднимаем DNS сервер.



The screenshot shows a terminal window titled "UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox". The terminal is running the GNU nano 6.2 editor, editing a file named "db.local *". The content of the file is a BIND configuration for a local loopback interface. It includes a \$TTL of 604800, an SOA record for ns1.shcherbakov.ru, and several other records: NS for ns1.shcherbakov.ru, MX for mail.shcherbakov.ru, and A records for ns1, www, and mail, all pointing to 172.24.24.1.

```
db.local *
;
; BIND data file for local loopback interface
;
$TTL 604800
shcherbakov.ru IN SOA ns1.shcherbakov.ru. root.localhost. (
; Serial
604800 ; Refresh
86400 ; Retry
2419200 ; Expire
604800 ) ; Negative Cache TTL
;
shcherbakov.ru IN NS ns1.shcherbakov.ru.
shcherbakov.ru IN MX 10 mail.shcherbakov.ru
shcherbakov.ru IN A 172.24.24.1
ns1 IN A 172.24.24.1
www IN CNAME shcherbakov.ru.
mail IN A 172.24.24.1
```

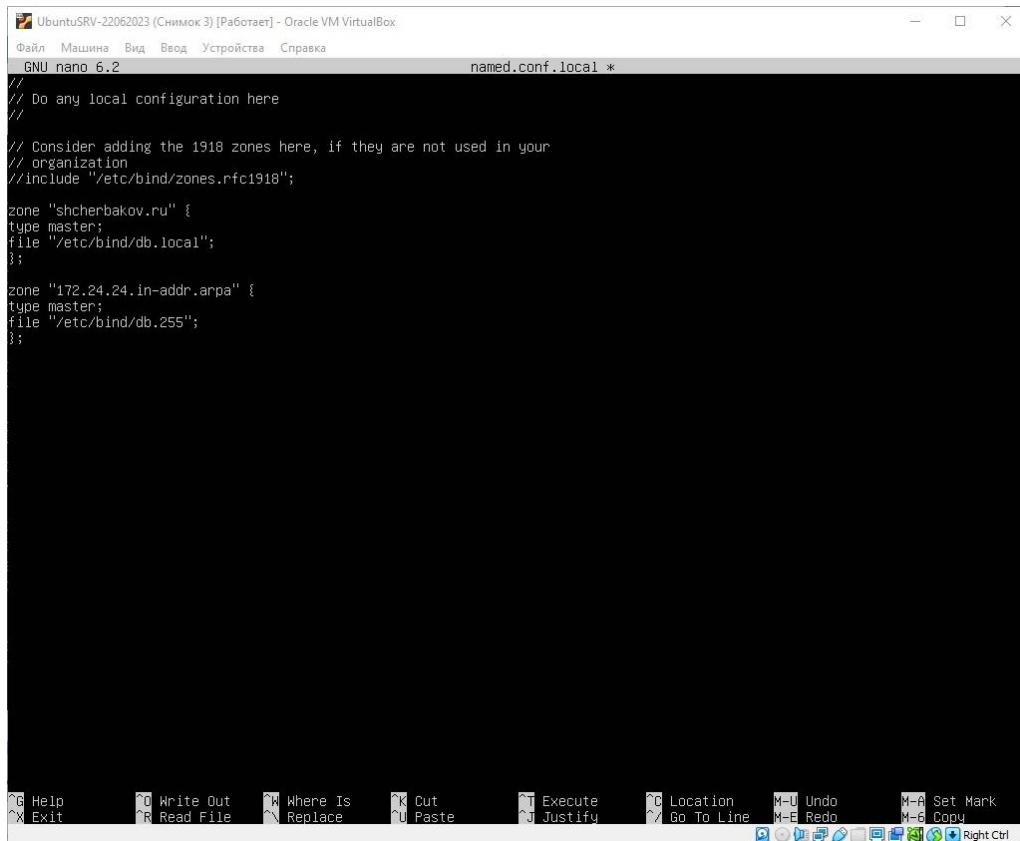
DNS сервер 1



The screenshot shows a terminal window titled "UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox". The terminal is running the GNU nano 6.2 editor, editing a file named "db.255". The content of the file is a BIND reverse data file for a broadcast zone. It includes a \$TTL of 604800, an SOA record for ns1.shcherbakov.ru, and several other records: NS for ns1.shcherbakov.ru, PTR for shcherbakov.ru, and A records for 172.24.24.1, 24.24.172, and 1.24.24.172, all pointing to ns1.shcherbakov.ru.

```
db.255
;
; BIND reverse data file for broadcast zone
;
$TTL 604800
172.24.24.in-addr.arpa. IN SOA ns1.shcherbakov.ru. root.shcherbakov.ru. (
; Serial
604800 ; Refresh
86400 ; Retry
2419200 ; Expire
604800 ) ; Negative Cache TTL
;
24.24.172.in-addr.arpa. IN NS ns1.shcherbakov.ru.
1.24.24.172.in-addr.arpa. IN PTR shcherbakov.ru.
```

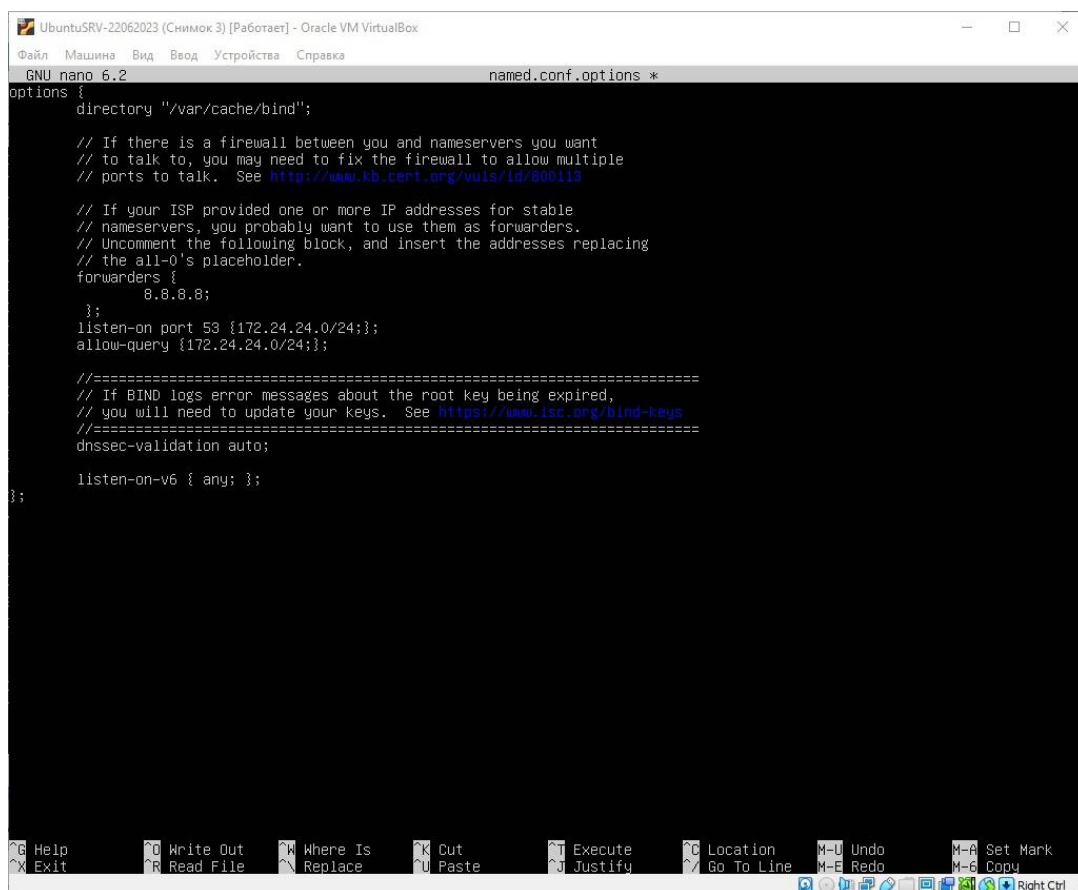
DNS сервер 2



The screenshot shows a terminal window titled "UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox". Inside the terminal, the GNU nano 6.2 editor is open, editing the file named.conf.local. The configuration includes a comment to add 1918 zones, an include statement for "/etc/bind/zones.rfc1918", and two zone definitions: "shcherbakov.ru" and "172.24.24.in-addr.arpa", both set as master zones with their respective database files.

```
GNU nano 6.2 named.conf.local *
// Do any local configuration here
//
// Consider adding the 1918 zones here, if they are not used in your
// organization
//include "/etc/bind/zones.rfc1918";
zone "shcherbakov.ru" {
type master;
file "/etc/bind/db.local";
};
zone "172.24.24.in-addr.arpa" {
type master;
file "/etc/bind/db.255";
};
```

DNS сервер 3



The screenshot shows a terminal window titled "UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox". Inside the terminal, the GNU nano 6.2 editor is open, editing the file named.conf.options. The configuration sets the directory to "/var/cache/bind", includes a comment about firewall settings, sets forwarders to "8.8.8.8", and configures listen-on port 53 for the 172.24.24.0/24 network. It also includes a section for dnssec-validation and listen-on-v6.

```
GNU nano 6.2 named.conf.options *
options {
directory "/var/cache/bind";

// If there is a firewall between you and nameservers you want
// to talk to, you may need to fix the firewall to allow multiple
// ports to talk. See http://www.kb.cert.org/wais/id/800113

// If your ISP provided one or more IP addresses for stable
// nameservers, you probably want to use them as forwarders.
// Uncomment the following block, and insert the addresses replacing
// the all-0's placeholder.
forwarders {
8.8.8.8;
};
listen-on port 53 {172.24.24.0/24;};
allow-query {172.24.24.0/24;};

//=====
// If BIND logs error messages about the root key being expired,
// you will need to update your keys. See https://www.isc.org/bind-keys
//=====
dnssec-validation auto;

listen-on-v6 { any; };
};
```

DNS сервер 4

```
UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка

root@ubuntu:~# systemctl restart bind9.service
root@ubuntu:~# systemctl restart bind9.service
root@ubuntu:~# dig @172.24.24.1 www.shcherbakov.ru

; <>> Dig 9.18.12-0ubuntu0.22.04.2-Ubuntu <>> @172.24.24.1 www.shcherbakov.ru
; (1 server found)
; global options: +cmd
; Got answer:
; ->>HEADER<- opcode: QUERY, status: NOERROR, id: 22247
; flags: qr aa rd ra; QUERY: 1, ANSWER: 2, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags: udp: 1232
; COOKIE: 6a39ac63164175a8010000006496909e83029dfd908c6d71 (good)
;; QUESTION SECTION:
;www.shcherbakov.ru.      IN      A

;; ANSWER SECTION:
www.shcherbakov.ru.      604800  IN      CNAME   shcherbakov.ru.
shcherbakov.ru.          604800  IN      A        172.24.24.1

;; Query time: 4 msec
;; SERVER: 172.24.24.1#53(172.24.24.1) (UDP)
;; WHEN: Sat Jun 24 06:43:42 UTC 2023
;; MSG SIZE rcvd: 105

root@ubuntu:~#
```

DNS сервер 5

Устанавливаем Docker и конфигурируем контейнер с веб-сервером.

```
UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка

root@ubuntu:~# docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
719385e32844: Pull complete
Digest: sha256:a13ec89cdf897b3e551bd9f89d499db6ff3a7f44c5b9eb8bca40da20eb4ea1fa
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/

root@ubuntu:~# docker pull busybox
Using default tag: latest
latest: Pulling from library/busybox
71d064a1ac7d: Pull complete
Digest: sha256:6e494387c901caf429c1bf77bd92fb82b33a68c0e19f6d1aa6a3ac8d27a7049d
Status: Downloaded newer image for busybox:latest
root@ubuntu:~# docker images
REPOSITORY   TAG       IMAGE ID   CREATED   SIZE
busybox      latest   b539af69bc01   2 weeks ago   4.86MB
hello-world  latest   9c7a54a9a43c   7 weeks ago   13.3kB

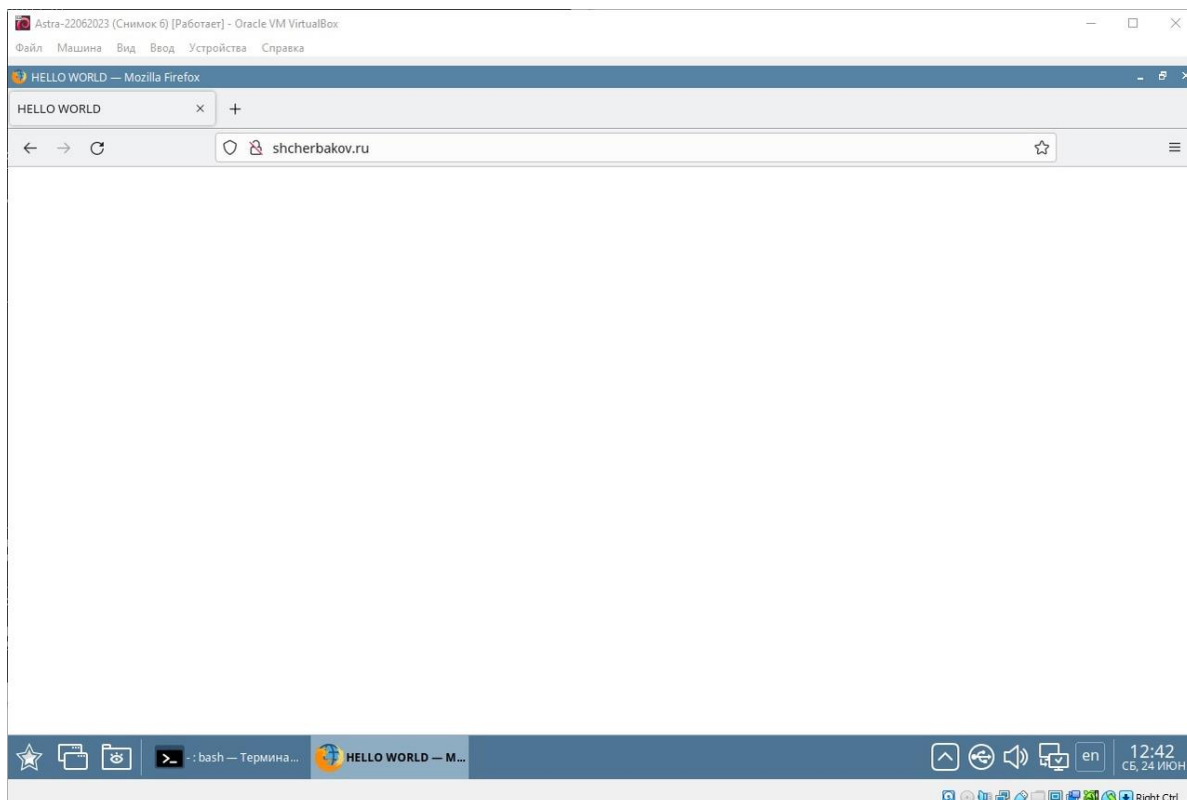
root@ubuntu:~#
```

Docker 1

```
UbuntuSRV-22062023 (Снимок 3) [Работа] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка

^C
root@ubuntusrv-22062023:/docker-test# docker build -t mywebdoc .
Sending build context to Docker daemon  4.608kB
Step 1/4 : FROM nginx
latest: Pulling from library/nginx
5b5fe70539cd: Pull complete
441a1b465367: Pull complete
3b9543f2b500: Pull complete
ca89ed5461a9: Pull complete
b0e1283145af: Pull complete
4b98867cde79: Pull complete
4a85ce26214d: Pull complete
Digest: sha256:599dac25b7733ffb7afe1a72649a43e574778bf025ad60514ef40f6b5d606247
Status: Downloaded newer image for nginx:latest
----> eb4a57159180
Step 2/4 : ENV TZ=Europe/Moscow
----> Running in d3af2a405efc
Removing intermediate container d3af2a405efc
----> 0d0fb6d17d94
Step 3/4 : COPY ./html/ /usr/share/nginx/html/
----> b9a2d10f703d
Step 4/4 : EXPOSE 80
----> Running in 7e021776c142
Removing intermediate container 7e021776c142
----> 3f91245e6e8d
Successfully built 3f91245e6e8d
Successfully tagged mywebdoc:latest
root@ubuntusrv-22062023:/docker-test# docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
mywebdoc      latest   3f91245e6e8d   19 seconds ago 187MB
nginx         latest   eb4a57159180   10 days ago   187MB
busybox       latest   b539af69bc01   2 weeks ago   4.06MB
hello-world   latest   9c7a54a9a43c   7 weeks ago   13.3kB
root@ubuntusrv-22062023:/docker-test#
```

Docker 2



Docker 3

```
UbuntuSRV-22062023 (Снимок 3) [Работает] - Oracle VM VirtualBox
Файл  Машина  Вид  Ввод  Устройства  Справка

0x0000: 4500 0051 f15e 0000 4011 c3b4 c0a8 0144
0x0010: b99a 4a02 a128 0035 003d c5d7 104c 0100
0x0020: 0001 0000 0000 0001 0131 0131 0331 3638
0x0030: 0331 3932 0769 6e2d 6164 6472 0461 7270
0x0040: 6100 000c 0001 0000 2905 c000 0000 0000
0x0050: 00
10:08:09.979771 IP 185.154.74.2.domain > ubuntu-srv-22062023.41256: 4172 NXDomain 0/1/1 (130)
0x0000: 4500 009e 72eb 0000 3e11 43db b99a 4a02
0x0010: c0a8 0144 0035 a128 008a 9c88 104c 8183
0x0020: 0001 0000 0001 0001 0131 0131 0331 3638
0x0030: 0331 3932 0769 6e2d 6164 6472 0461 7270
0x0040: 6100 000c 0001 c010 0006 0001 0000 0d78
0x0050: 0041 0870 7269 736f 6e65 7204 6961 6e61
0x0060: 036f 7267 000a 686f 7374 6d61 7374 6572
0x0070: 0c72 6f6f 742d 7365 7276 6572 73c0 4400
0x0080: 0000 0100 093a 8000 0000 3c00 093a 8000
0x0090: 093a 8000 0029 05d4 0000 0000 0000
10:08:09.978307 IP ubuntu-srv-22062023.41256 > 185.154.74.2.domain: 4172+ PTR? 1.1.168.192.in-addr.arpa. (42)
0x0000: 4500 0046 f15f 0000 4011 c3be c0a8 0144
0x0010: b99a 4a02 a128 0035 0032 c5cc 104c 0100
0x0020: 0001 0000 0000 0000 0131 0131 0331 3638
0x0030: 0331 3932 0769 6e2d 6164 6472 0461 7270
0x0040: 6100 000c 0001
10:08:09.983384 IP 185.154.74.2.domain > ubuntu-srv-22062023.41256: 4172 NXDomain 0/1/0 (119)
0x0000: 4500 0093 7357 0000 3e11 437a b99a 4a02
0x0010: c0a8 0144 0035 a128 007f a29c 104c 8183
0x0020: 0001 0000 0001 0000 0131 0131 0331 3638
0x0030: 0331 3932 0769 6e2d 6164 6472 0461 7270
0x0040: 6100 000c 0001 c010 0006 0001 0000 0d78
0x0050: 0041 0870 7269 736f 6e65 7204 6961 6e61
0x0060: 036f 7267 000a 686f 7374 6d61 7374 6572
0x0070: 0c72 6f6f 742d 7365 7276 6572 73c0 4400
0x0080: 0000 0100 093a 8000 0000 3c00 093a 8000
0x0090: 093a 80
5 packets captured
24 packets received by filter
0 packets dropped by kernel
root@ubuntu-srv-22062023:~# ping 172.24.24.2
PING 172.24.24.2 (172.24.24.2) 56(84) bytes of data.
64 bytes from 172.24.24.2: icmp_seq=1 ttl=64 time=0.000 ms
ping: Warning: time of day goes back (-5806us), taking countermeasures
64 bytes from 172.24.24.2: icmp_seq=2 ttl=64 time=2.29 ms
64 bytes from 172.24.24.2: icmp_seq=3 ttl=64 time=2.18 ms
^C
--- 172.24.24.2 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2007ms
rtt min/avg/max/mdev = 0.000/1.491/2.289/1.055 ms
root@ubuntu-srv-22062023:~#
```

tcpdump

2 Заключение

В ходе данной квалификационной работы были закреплены и обобщены знания данные в течение курса обучения администрирования ОС Linux.