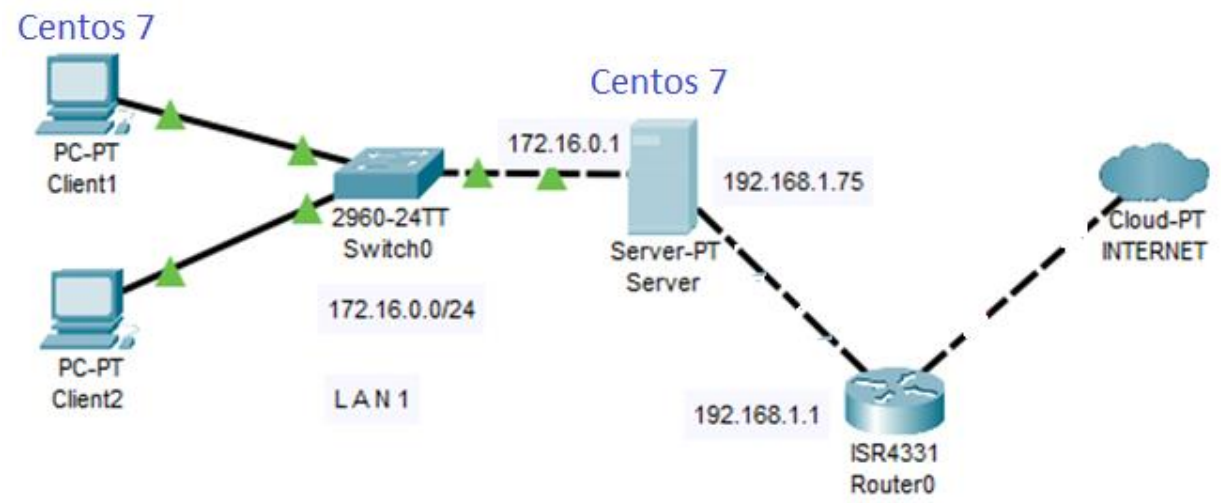
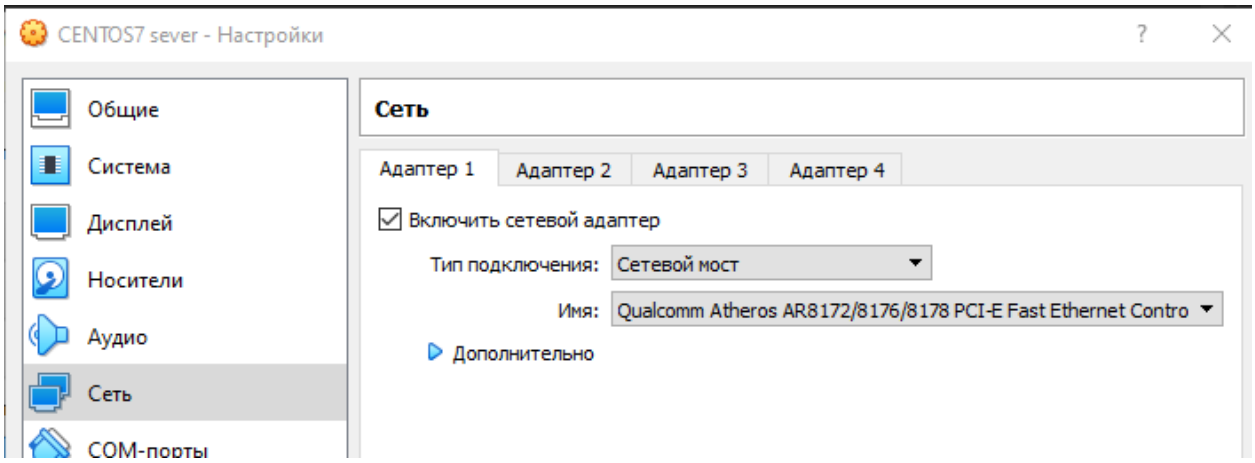
Пример базовой настройки сервера Ubuntu 22.04

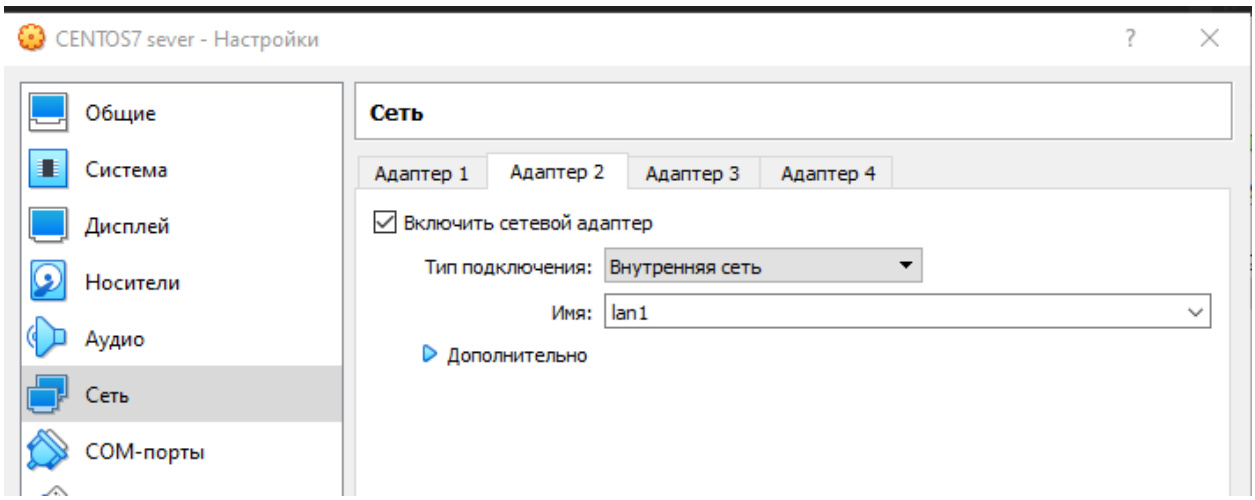
Рассмотрим пример, компьютеры находятся в локальной сети. Сетевые настройки они получают от сервера, доступ в Интернет, так же через сервер.



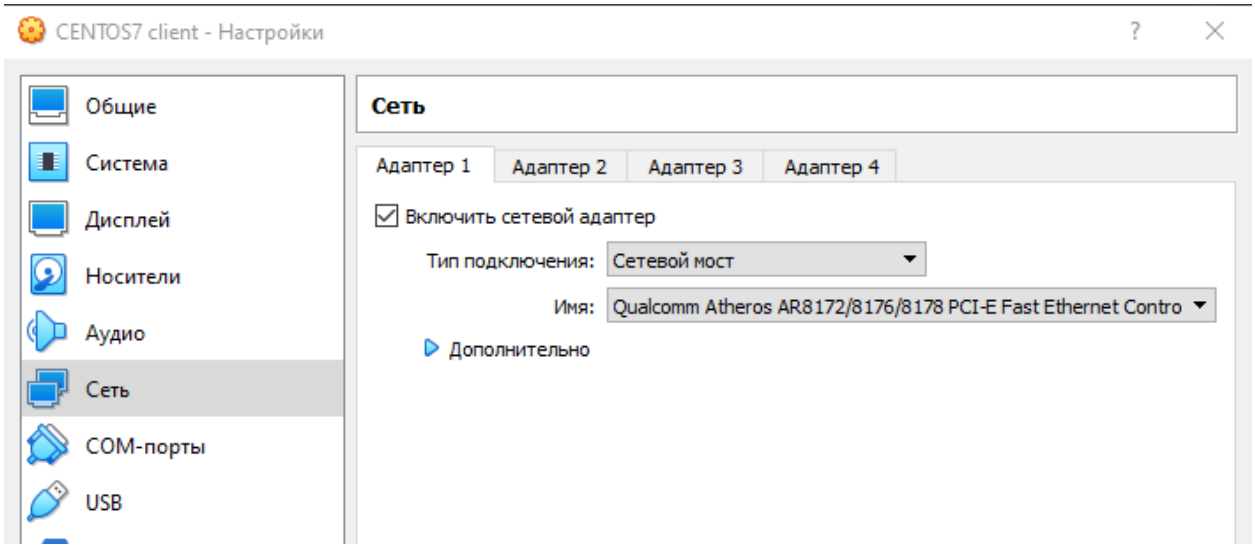
Настройки виртуальных машин.

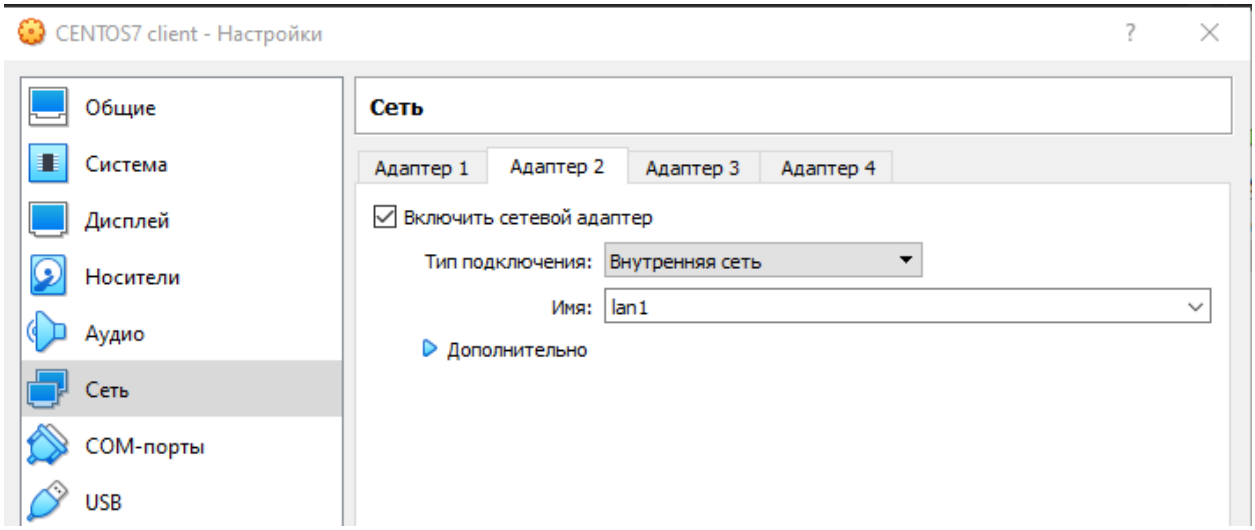
1. Сервер:





2. Клиентская машина:





Настройка сервера.

1. Изменим имя хоста:

```
[root@localhost ~]# hostnamectl set-hostname server
[root@localhost ~]# bash
[root@server ~]#
```

2. Обновление сведений о пакетах

```
[root@server ~]# yum update -y
Загружены модули: fastestmirror
Loading mirror speeds from cached hostfile
epel/x86_64/metalink                                    | 8.9 kB     00:00
```

3. Обновление установленных пакетов:

```
[root@server ~]# yum upgrade -y
Загружены модули: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.neolabs.kz
```

4. Настройка сетевых интерфейсов:

```
user@serv:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaul
t 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 gr
oup default qlen 1000
    link/ether 08:00:27:18:07:24 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.119/24 metric 100 brd 192.168.1.255 scope global dynamic enp0
s3
       valid_lft 86301sec preferred_lft 86301sec
    inet6 fe80::a00:27ff:fe18:724/64 scope link
       valid_lft forever preferred_lft forever
3: enp0s8: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOW
N group default qlen 1000
    link/ether 08:00:27:ce:12:b6 brd ff:ff:ff:ff:ff:ff
user@serv:~$
```

Интерфейс enp0s3 настроен, нужно настроить enp0s8. Отредактируем конфигурационный файл интерфейсов:

nano /etc/netplan/00-installer-config.yaml

```
  GNU nano 6.2                /etc/netplan/00-installer-config.yaml
# This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      dhcp4: true
    enp0s8:
      dhcp4: false
      addresses:
        - 172.16.0.1/24
      gateway4: 172.16.0.1
      nameservers:
        addresses: [172.16.0.1, 8.8.8.8]
  version: 2
```

Применим изменения:

sudo netplan apply

```
user@serv:~$ sudo netplan apply

** (generate:2971): WARNING **: 15:41:48.883: `gateway4` has been deprecated, us
e default routes instead.
See the 'Default routes' section of the documentation for more details.
WARNING:root:Cannot call Open vSwitch: ovsdb-server.service is not running.

** (process:2969): WARNING **: 15:41:50.904: `gateway4` has been deprecated, use
 default routes instead.
See the 'Default routes' section of the documentation for more details.

** (process:2969): WARNING **: 15:41:51.617: `gateway4` has been deprecated, use
 default routes instead.
See the 'Default routes' section of the documentation for more details.

** (process:2969): WARNING **: 15:41:51.622: `gateway4` has been deprecated, use
 default routes instead.
See the 'Default routes' section of the documentation for more details.
```

Проверяем:

```
user@serv:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaul
t 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 gr
oup default qlen 1000
    link/ether 08:00:27:18:07:24 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.119/24 metric 100 brd 192.168.1.255 scope global dynamic enp0
s3
       valid_lft 86283sec preferred_lft 86283sec
    inet6 fe80::a00:27ff:fe18:724/64 scope link
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP gr
oup default qlen 1000
    link/ether 08:00:27:ce:12:b6 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.1/24 brd 172.16.0.255 scope global enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fece:12b6/64 scope link
       valid_lft forever preferred_lft forever
user@serv:~$
```

Интерфейсы настроены.

5. Настройка DHCP:

Установка DHCP:

```
sudo apt install isc-dhcp-server
```

Настраиваем, редактируя конф. файл:

```
nano /etc/dhcp/dhcpd.conf
```

Добавим следующее:

```
# Lan 1
subnet 172.16.0.0 netmask 255.255.255.0 {
   range 172.16.0.10 172.16.0.200;
   option routers 172.16.0.1;
   option domain-name-servers 172.16.0.1, 8.8.8.8;
}
```

Где:

subnet 172.16.0.0 netmask 255.255.255.0 - локальная сеть

range 172.16.0.10 172.16.0.200; - диапазон выдаваемых адресов
option routers 172.16.0.1; - шлюз по умолчанию (указываем свой IP-адрес)
option domain-name-servers 172.16.0.1, 8.8.8.8; - DNS сервера

```
  GNU nano 6.2                    /etc/dhcp/dhcpd.conf *
#subnet 10.5.5.0 netmask 255.255.255.224 {
#   range 10.5.5.26 10.5.5.30;
#   option domain-name-servers ns1.internal.example.org;
#   option domain-name "internal.example.org";
#   option subnet-mask 255.255.255.224;
#   option routers 10.5.5.1;
#   option broadcast-address 10.5.5.31;
#   default-lease-time 600;
#   max-lease-time 7200;
#}
# Определяем подсеть и диапазон IP-адресов для выдачи
subnet 172.16.0.0 netmask 255.255.255.0 {
   range 172.16.0.10 172.16.0.200;
   option routers 172.16.0.1;
   option domain-name-servers 172.16.0.1, 8.8.8.8;
}
```

Запускаем службу и проверяем, что демон работает:

```
user@serv:~$ sudo systemctl start isc-dhcp-server
user@serv:~$ sudo systemctl status isc-dhcp-server
● isc-dhcp-server.service - ISC DHCP IPv4 server
     Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vend>
     Active: active (running) since Thu 2024-04-25 16:09:21 UTC; 6s ago
       Docs: man:dhcpd(8)
   Main PID: 3613 (dhcpd)
      Tasks: 4 (limit: 1012)
     Memory: 6.1M
        CPU: 71ms
     CGroup: /system.slice/isc-dhcp-server.service
             └─3613 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/d>

апр 25 16:09:21 serv sh[3613]:    you want, please write a subnet declaration
апр 25 16:09:21 serv sh[3613]:    in your dhcpd.conf file for the network segme>
апр 25 16:09:21 serv sh[3613]:    to which interface enp0s3 is attached. **
апр 25 16:09:21 serv sh[3613]: Sending on   Socket/fallback/fallback-net
апр 25 16:09:21 serv dhcpd[3613]:    you want, please write a subnet declaration
апр 25 16:09:21 serv dhcpd[3613]:    in your dhcpd.conf file for the network se>
апр 25 16:09:21 serv dhcpd[3613]:    to which interface enp0s3 is attached. **
апр 25 16:09:21 serv dhcpd[3613]:
апр 25 16:09:21 serv dhcpd[3613]: Sending on   Socket/fallback/fallback-net
апр 25 16:09:21 serv dhcpd[3613]: Server starting service.
user@serv:~$ sudo systemctl enable isc-dhcp-server
```

6. Настройка интерфейсов клиента

```
  GNU nano 6.2                     /etc/netplan/00-installer-config.yaml *
# This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      dhcp4: true
    enp0s8:
      dhcp4: true_
  version: 2
```

```
user@client1:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qle
    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 d
0
    link/ether 08:00:27:ad:ed:ba brd ff:ff:ff:ff:ff:ff
    inet6 fe80::a00:27ff:fead:edba/64 scope link
       valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group d
0
    link/ether 08:00:27:65:5c:87 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.10/24 metric 100 brd 172.16.0.255 scope global dynamic enp0s8
       valid_lft 546sec preferred_lft 546sec
    inet6 fe80::a00:27ff:fe65:5c87/64 scope link
       valid_lft forever preferred_lft forever
user@client1:~$
```

Интерфейс enp0s8 получил настройки по DHCP.

Отключаем интерфейс enp0s3:

```
[root@client1 ~]# ifdown enp0s3
Выполнено: устройство «enp0s3» отключено.
[root@client1 ~]# 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 pfifo_fast state UP group default qlen 1
000
    link/ether 08:00:27:67:6e:fa brd ff:ff:ff:ff:ff:ff
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1
000
    link/ether 08:00:27:c5:36:47 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.10/24 brd 172.16.0.255 scope global noprefixroute dynamic enp0s8
       valid_lft 323sec preferred_lft 323sec
    inet6 fe80::12d1:bc74:55fd:8cb8/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

И проверяем состояние связи:

```
user@client1:~$ ping 172.16.0.1
PING 172.16.0.1 (172.16.0.1) 56(84) bytes of data.
64 bytes from 172.16.0.1: icmp_seq=1 ttl=64 time=2.21 ms
64 bytes from 172.16.0.1: icmp_seq=2 ttl=64 time=2.41 ms
^C
```

```
user@client1:~$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
^C
```

Сервер доступен. Выхода в Интернет пока нет, т.к. NAT еще не настроен.

7. Настройка маршрутизации и NAT:

Включаем маршрутизацию в ядре.

sudo sh -c "echo 1 > /proc/sys/net/ipv4/ip_forward"

```
user@client1:~$ sudo sh -c "echo 1 > /proc/sys/net/ipv4/ip_forward"
[sudo] password for user:
user@client1:~$ _
```

NAT:

sudo iptables -t nat -A POSTROUTING -o enp0s3 -j MASQUERADE

```
user@client1:~$ sudo iptables -t nat -A POSTROUTING -o enp0s3 -j MASQUERADE
user@client1:~$ _
```

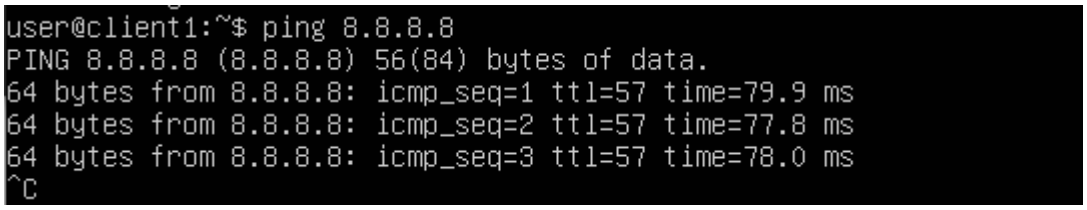
Настройка маршрутизации:

Посмотрим таблицу маршрутизации:

```
[root@server ~]# ip route
default via 192.168.1.1 dev enp0s3 proto dhcp metric 100
172.16.0.0/24 dev enp0s8 proto kernel scope link src 172.16.0.1 metric 101
192.168.1.0/24 dev enp0s3 proto kernel scope link src 192.168.1.75 metric 100
[root@server ~]#
```

Есть маршрут по умолчанию через роутер 192.168.1.1, получен от DHCP-сервера. Настройка не нужна.

Теперь проверим доступ в Интернет из компьютера в локальной сети:



Работает. Настройка завершена.